



## Repair Manual

Jetta 2011 ➤

Jetta 2013 ➤

Communication

Edition 12.2015



## List of Workshop Manual Repair Groups

### Repair Group

00 - General, Technical Data

91 - Communication



Technical information should always be available to the foremen and mechanics, because their careful and constant adherence to the instructions is essential to ensure vehicle road-worthiness and safety. In addition, the normal basic safety precautions for working on motor vehicles must, as a matter of course, be observed.



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## 00 – General, Technical Data

### 1 Repair Information

(Edition 12.2015)

⇒ [“1.1 General Repair Information”, page 1](#)

⇒ [“1.2 CAN Bus Wires Repair Information”, page 1](#)

#### 1.1 General Repair Information

Electric wiring harnesses and connectors, repairing. Refer to ⇒ Electrical Information; Rep. Gr. 97 ; Connectors; Wiring Harnesses and Connectors, Repairing .

Connector housings, releasing and disassembling. Refer to ⇒ Electrical Equipment; Rep. Gr. 97 ; Connector Housings, Releasing and Disassembling .

Vehicle diagnostic testers. Refer to ⇒ Electrical Equipment; Rep. Gr. 97 ; Vehicle Diagnostic Tester .

A new repair concept has been developed for repairing antenna wires. Instead of a complete antenna wire, connecting wires of different lengths and various adapter leads are now available as replacement parts.

Antenna wires, repairing. Refer to ⇒ Electrical Equipment; Rep. Gr. 97 ; Antenna Wires, Repairing .

#### 1.2 CAN Bus Wires Repair Information

Repairing CAN Bus lines. Refer to ⇒ Electrical Equipment General Information; Rep. Gr. 97 ; Connectors; Wiring Harnesses and Connectors, Repairing .



## 91 – Communication

### 1 Infotainment System

⇒ **"1.1 Compass Magnetic Field Sensor, Removing and Installing", page 2**

#### 1.1 Compass Magnetic Field Sensor, Removing and Installing

The Compass Magnetic Field Sensor - G197- is inside the rear lid.

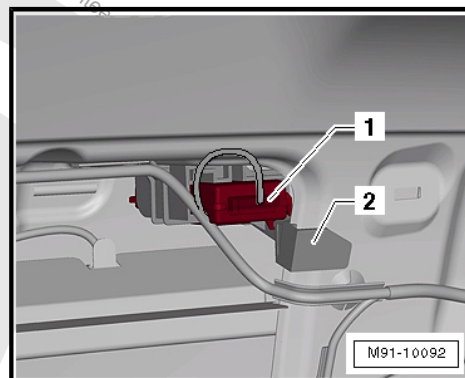
##### Removing

- Remove the rear lid trim panel. Refer to ⇒ **Body Interior; Rep. Gr. 70 ; Luggage Compartment Trim Panels; Rear Lid End Panel Trim Panel, Removing and Installing** .
- Using a small screwdriver, remove the Compass Magnetic Field Sensor - G197- -1- from the holder -2-.
- Release and disconnect the connector.

##### Installing

Install in reverse order of removal.

- Calibrate the compass again.





## 2 Sound System

⇒ [“2.1 Overview - Sound System”, page 3](#)

⇒ [“2.2 Component Location Overview - Sound System”, page 9](#)

⇒ [“2.3 Control Module/Digital Sound System Amplifier, Removing and Installing”, page 10](#)

⇒ [“2.4 Left and Right Rear Treble Speaker R14 / R16 , Removing and Installing”, page 10](#)

⇒ [“2.5 Left/Right Front Treble Speaker R20 / R22 , Removing and Installing”, page 11](#)

⇒ [“2.6 Left/Right Rear Bass Speaker R15 / R17 , Removing and Installing”, page 12](#)

⇒ [“2.7 Left/Right Front Bass Speaker R21 / R23 , Removing and Installing”, page 13](#)

⇒ [“2.8 Subwoofer R211 , Removing and Installing”, page 13](#)

⇒ [“2.9 Connector Assignments”, page 14](#)

### 2.1 Overview - Sound System

⇒ [“2.1.1 Overview - Sound System, 4 Speakers”, page 3](#)

⇒ [“2.1.2 Overview - Sound System, 6 Speakers”, page 5](#)

⇒ [“2.1.3 Overview - Sound System, 8 Speakers”, page 6](#)

⇒ [“2.1.4 Overview - Sound System, Volkswagen Sound”, page 7](#)

⇒ [“2.1.5 Overview - Sound System, Branded Sound”, page 8](#)

#### 2.1.1 Overview - Sound System, 4 Speakers

##### 4 - Speaker System



1 - Radio - R-

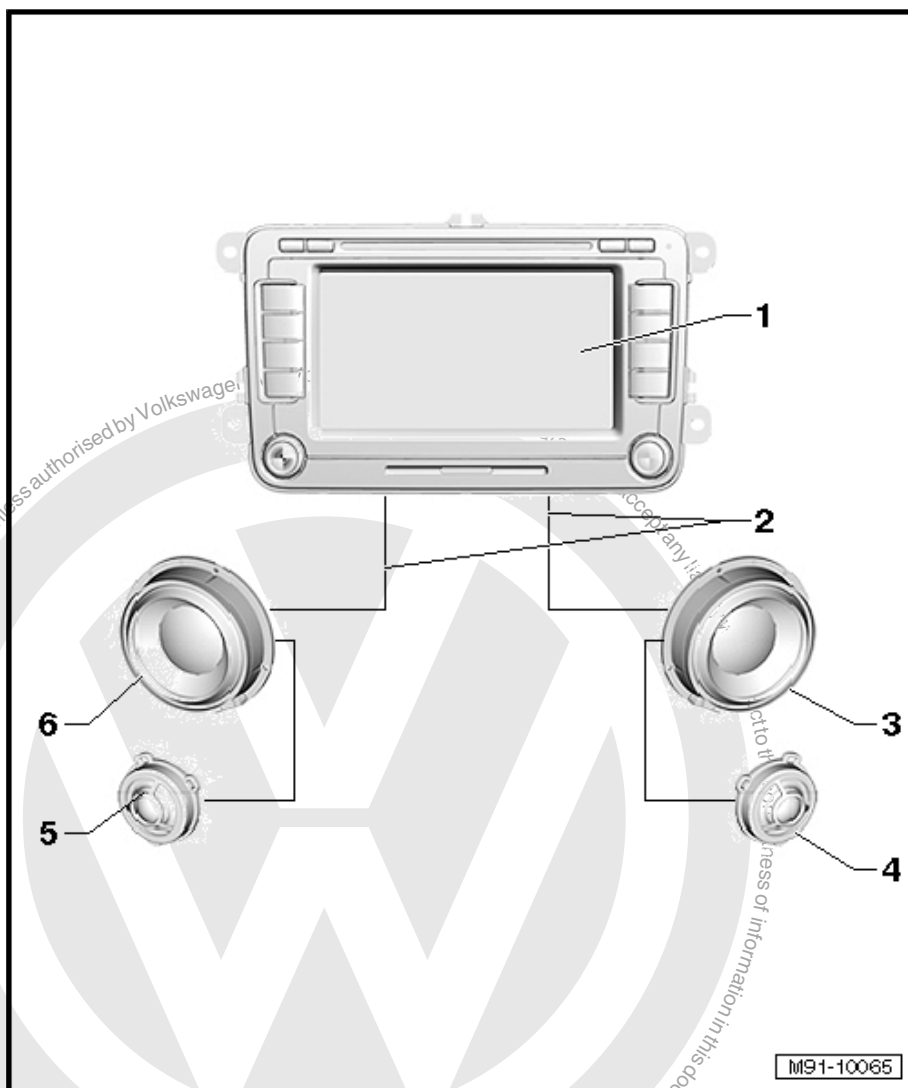
2 - LF Wires

3 - Right Front Bass Speaker -  
R23- in the Right Front Door

4 - Right Front Treble Speaker  
- R22- in the Right A-pillar

5 - Left Front Treble Speaker -  
R20- in the Left A-pillar

6 - Left Front Bass Speaker -  
R21- in the Left Front Door







## 2.1.2 Overview - Sound System, 6 Speakers

### 6 - Speaker System

1 - Radio - R-

2 - LF Wires

3 - Right Front Bass Speaker -  
R23- in the Right Front Door

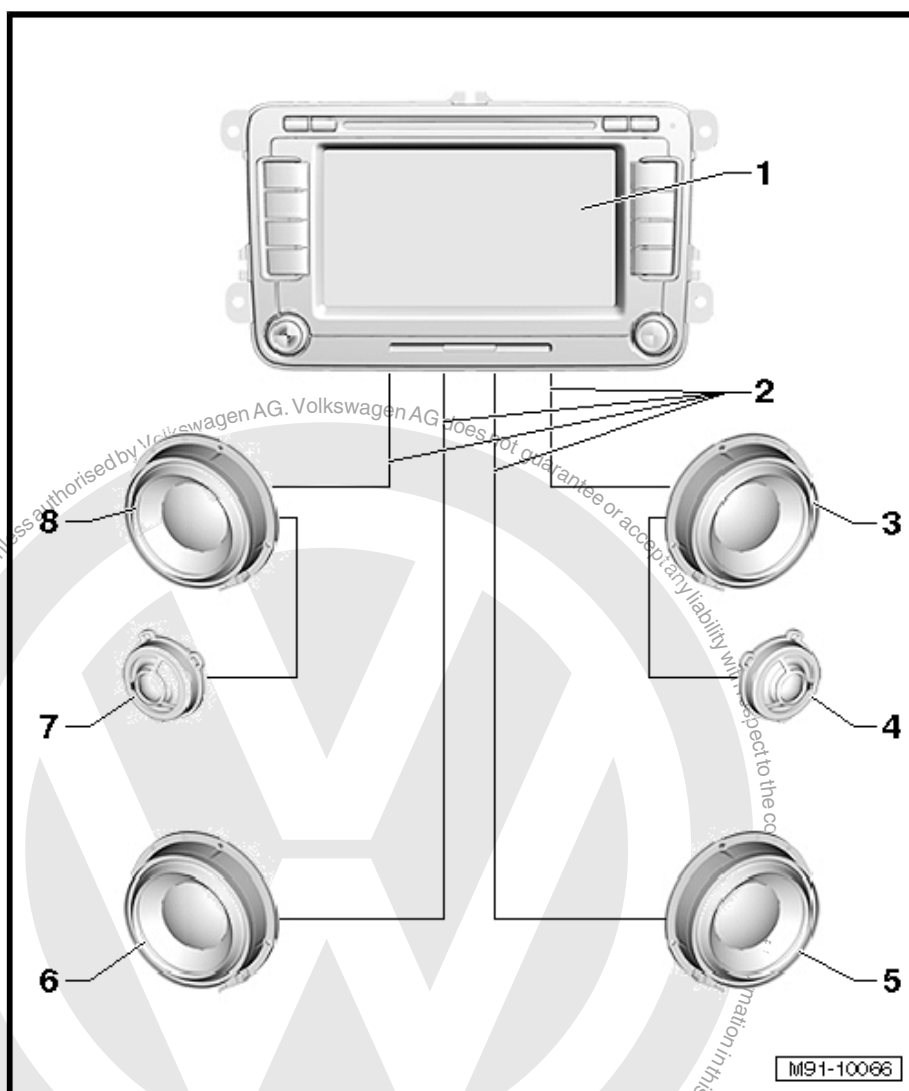
4 - Right Front Treble Speaker  
- R22- in the Right A-pillar

5 - Right Front Midrange  
Speaker - R104- in the Right  
Front Door

6 - Left Front Midrange Speak-  
er - R103- in the Left Front  
Door

7 - Left Front Treble Speaker -  
R20- in the Left A-pillar

8 - Left Front Bass Speaker -  
R21- in the Left Front Door





## 2.1.3 Overview - Sound System, 8 Speakers

### 8 - Speaker System

1 - Radio - R-

2 - LF Wires

3 - Right Front Bass Speaker -  
R23- in the Right Front Door

4 - Right Front Treble Speaker  
- R22- in the Right A-pillar

5 - Right Rear Treble Speaker  
- R16- in the Right Rear Door

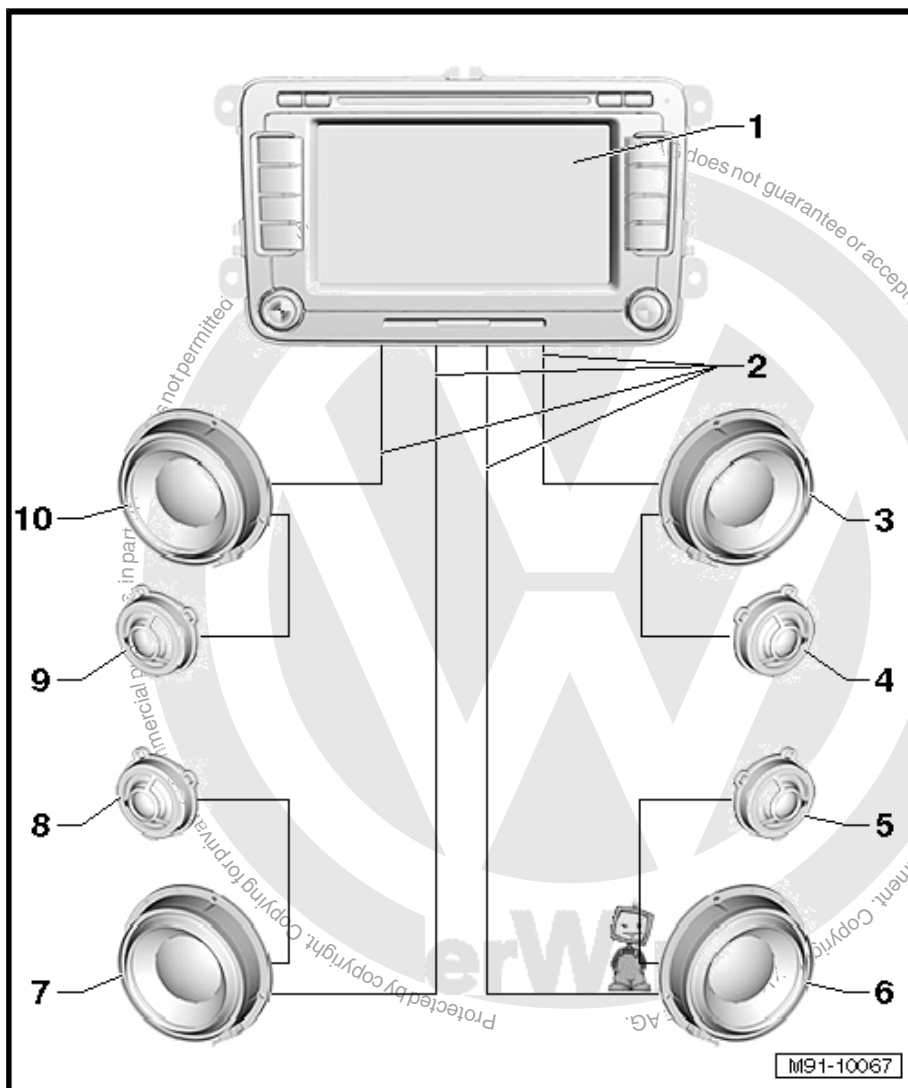
6 - Right Rear Bass Speaker -  
R17- in the Right Rear Door

7 - Left Rear Bass Speaker -  
R15- in the Left Rear Door

8 - Left Rear Treble Speaker -  
R14- in the Left Rear Door

9 - Left Front Treble Speaker -  
R20- in the Left A-pillar

10 - Left Front Bass Speaker -  
R21- in the Left Front Door

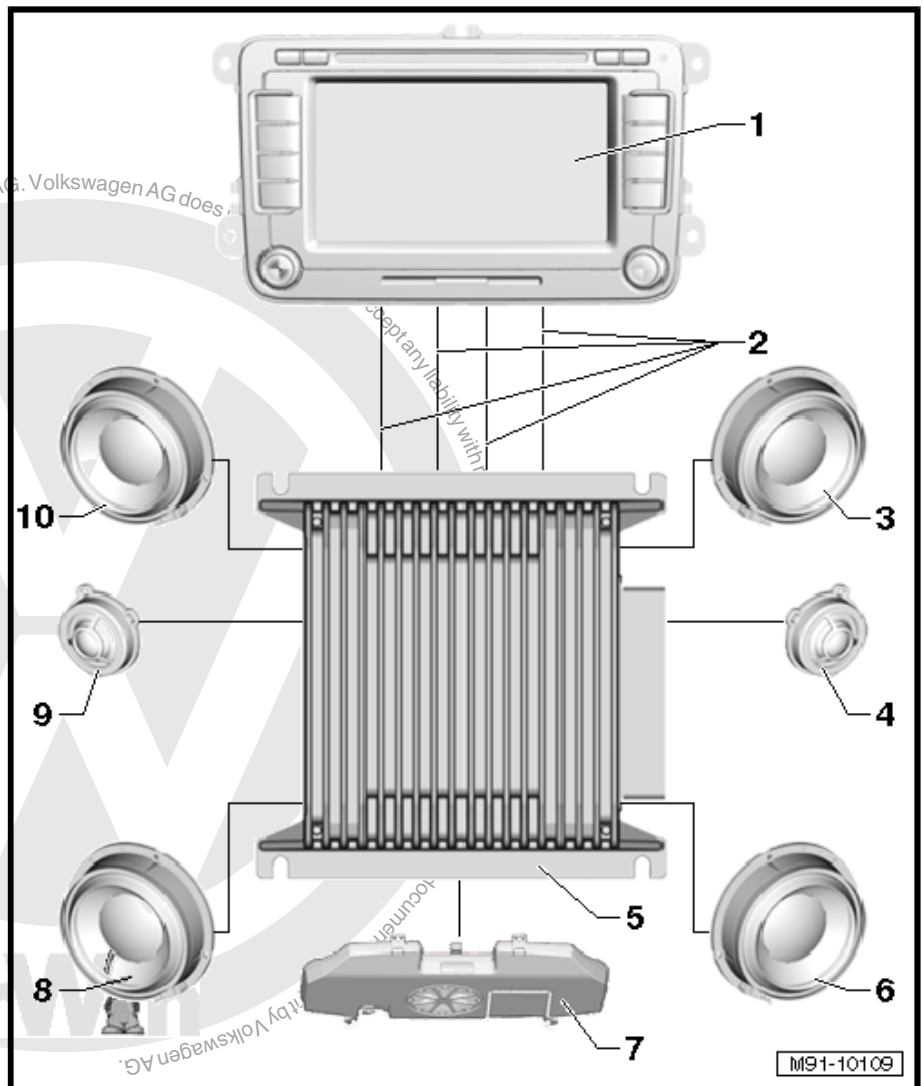




## 2.1.4 Overview - Sound System, Volkswagen Sound

### Volkswagen Sound

- 1 - Radio - R-
- 2 - LF Wires
- 3 - Right Front Bass Speaker - R23- in the Right Front Door
- 4 - Right Front Treble Speaker - R22- in the Right A-pillar
- 5 - Right Rear Treble Speaker - R16- in the Right Rear Door
- 6 - Right Rear Bass Speaker - R17- in the Right Rear Door
- 7 - Amplifier - R12- under the Left Front Seat
- 8 - Subwoofer - R211- in the Luggage Compartment under the Rear Shelf
- 9 - Left Rear Bass Speaker - R15- in the Left Rear Door
- 10 - Left Rear Treble Speaker - R14- in the Left Rear Door
- 11 - Left Front Treble Speaker - R20- in the Left A-pillar
- 12 - Left Front Bass Speaker - R21- in the Left Front Door

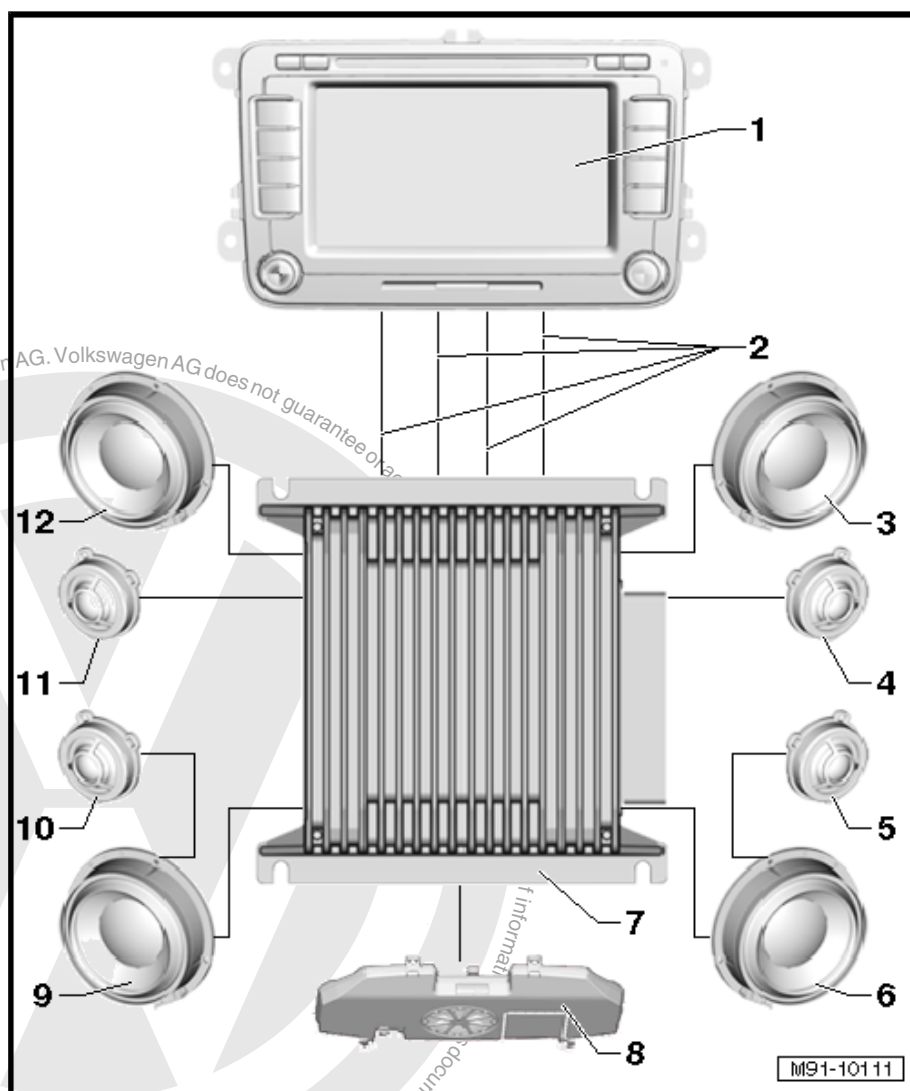




## 2.1.5 Overview - Sound System, Branded Sound

### Branded Sound

- 1 - Radio - R-
- 2 - LF Wires
- 3 - Right Front Bass Speaker - R23- in the Right Front Door
- 4 - Right Front Treble Speaker - R22- in the Right A-pillar
- 5 - Right Rear Treble Speaker - R16- in the Right Rear Door
- 6 - Right Rear Bass Speaker - R17- in the Right Rear Door
- 7 - Amplifier - R12- under the Left Front Seat
- 8 - Subwoofer - R211- in the Luggage Compartment under the Rear Shelf
- 9 - Left Rear Bass Speaker - R15- in the Left Rear Door
- 10 - Left Rear Treble Speaker - R14- in the Left Rear Door
- 11 - Left Front Treble Speaker - R20- in the Left A-pillar
- 12 - Left Front Bass Speaker - R21- in the Left Front Door





## 2.2 Component Location Overview - Sound System

### 1 - Right Front Treble Speaker - R22- / Left Front Treble Speaker - R20-

- ☐ In the A-pillars
- ☐ Removing and Installing. Refer to  
⇒ ["2.5 Left/Right Front Treble Speaker R20 / R22 , Removing and Installing", page 11](#) .

### 2 - Radio/RNS

- ☐ Radio. Refer to  
⇒ ["4 Radio", page 24](#) .
- ☐ RNS. Refer to  
⇒ ["6 Navigation System", page 85](#) .

### 3 - Subwoofer - R211-

- ☐ Screws: 4 Nm
- ☐ Inside the luggage compartment under the rear shelf
- ☐ Removing and Installing. Refer to  
⇒ ["2.8 Subwoofer R211 , Removing and Installing", page 13](#) .

### 4 - Right Rear Treble Speaker - R16- / Left Rear Treble Speaker - R14-

- ☐ In the rear doors
- ☐ Removing and Installing. Refer to  
⇒ ["2.4 Left and Right Rear Treble Speaker R14 / R16 , Removing and Installing", page 10](#) .

### 5 - Right Rear Bass Speaker - R17- / Left Rear Bass Speaker - R15-

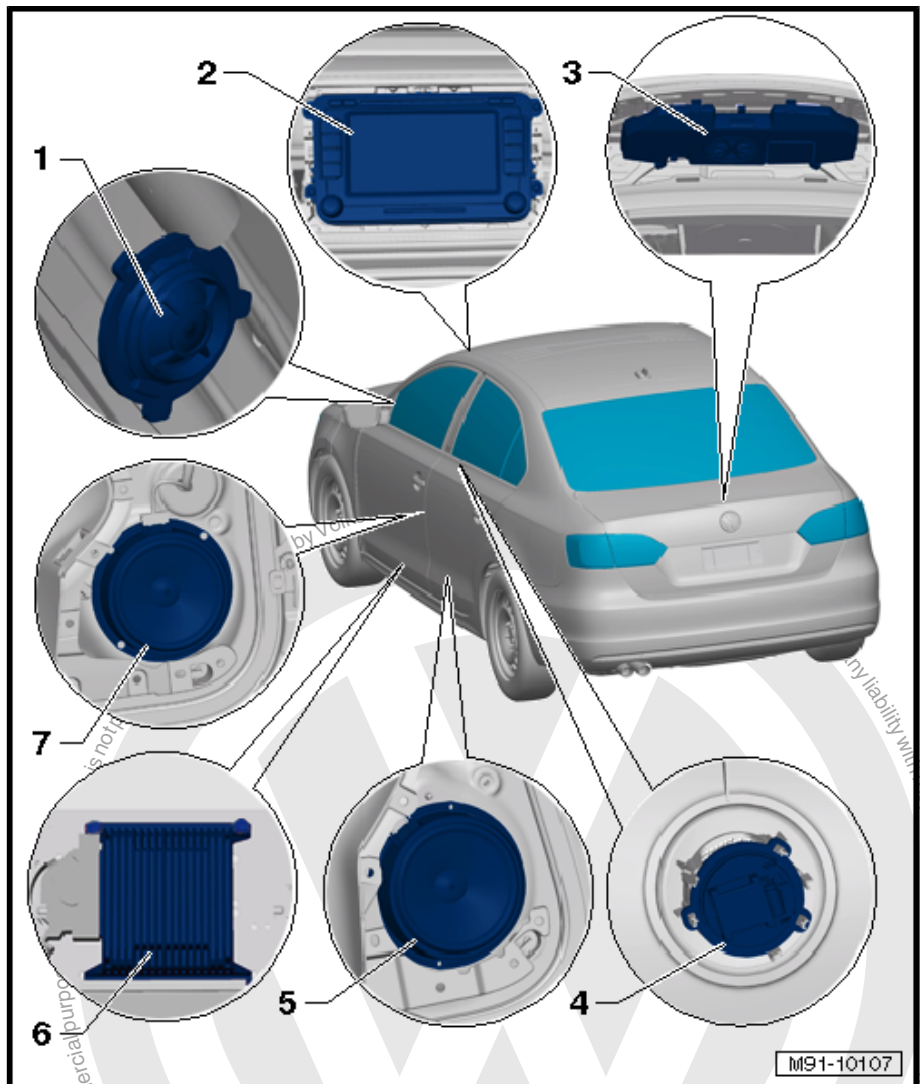
- ☐ In the rear doors
- ☐ Removing and Installing. Refer to  
⇒ ["2.6 Left/Right Rear Bass Speaker R15 / R17 , Removing and Installing", page 12](#) .

### 6 - Amplifier - R12-

- ☐ Screws: 4 Nm
- ☐ Under the left front seat.
- ☐ Removing and Installing. Refer to ⇒ ["2.3.1 Amplifier R12 , Removing and Installing", page 10](#) .

### 7 - Right Front Bass Speaker - R23- / Left Front Bass Speaker - R21-

- ☐ In front doors
- ☐ Removing and Installing. Refer to  
⇒ ["2.7 Left/Right Front Bass Speaker R21 / R23 , Removing and Installing", page 13](#) .





## 2.3 Control Module/Digital Sound System Amplifier, Removing and Installing

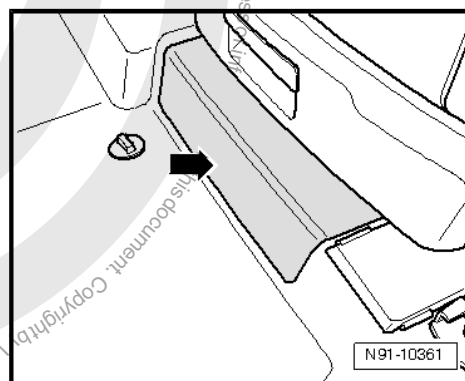
⇒ ["2.3.1 Amplifier R12, Removing and Installing", page 10](#)

### 2.3.1 Amplifier - R12- , Removing and Installing

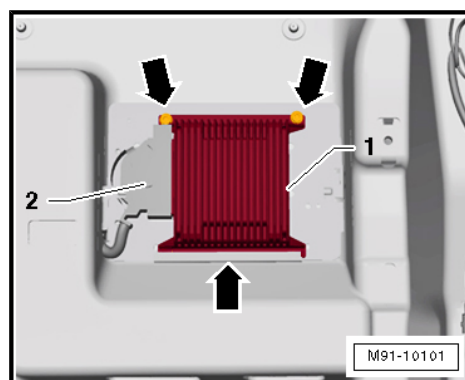
The Amplifier - R12- is located under the left front seat.

#### Removing

- Switch off the ignition and all electrical consumers and remove the ignition key.
- Move the left front seat into its highest position and then move it all the back.
- Remove the lower cover -arrow- from the seat.



- Remove the screws -arrows- on the Amplifier - R12- -1-.
- Release and disconnect the connector -2- from the Amplifier - R12- -1-.
- Remove the Amplifier - R12- from the notch -arrow-.



#### Installing

Install in reverse order of removal.

#### Tightening Specifications

- ◆ Refer to  
⇒ ["2.2 Component Location Overview - Sound System", page 9](#)

## 2.4 Left and Right Rear Treble Speaker - R14- / -R16- , Removing and Installing

The Left Rear Treble Speaker - R14- / Right Rear Treble Speaker - R16- is secured together with the trim from the rear on the door trim panel.



#### Note

*Removal and installation is described for the Left Rear Treble Speaker - R14- . Removal and installation for the Right Rear Treble Speaker - R16- is the same.*

#### Removing

- Switch off the ignition and all electrical equipment and remove the ignition key.





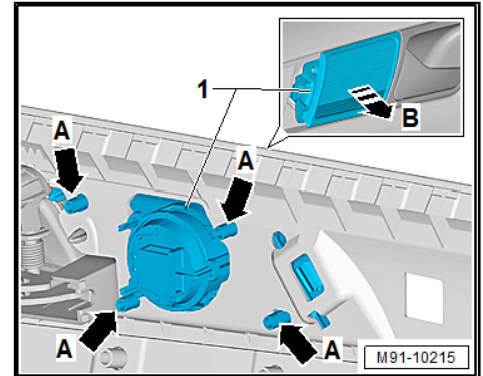
- Remove the rear door trim panel. Refer to ➤ Body Interior; Rep. Gr. 70 ; Door Trim Panels; Rear Door Trim Panel, Removing and Installing .



#### Caution

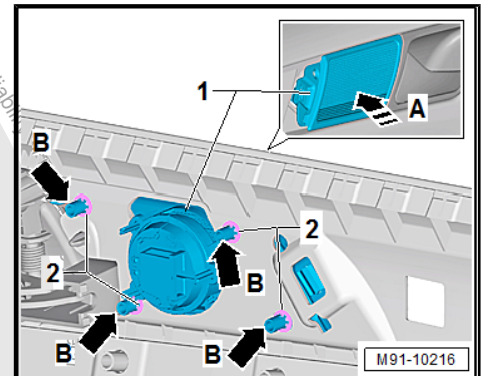
*The door trim panel must not be damaged when drilling.*

- Carefully loosen the securing points -A arrows- consecutively on the trim using a suitable drill bit.
- Remove the Left Rear Treble Speaker - R14- with trim -1- from the rear door trim panel in the direction of the arrow -B-.



#### Installing

- Insert the new Left Rear Treble Speaker - R14- with trim -1- into the rear door trim panel in the direction of the arrow -A-.
- Press the lock washer -2- all the way onto the pins -B arrows- on the trim.
- Cut back the pins -B arrows- above the lock washers -2- on the trim to a maximum of 2 mm projecting end.
- Install the rear door trim panel. Refer to ➤ Body Interior; Rep. Gr. 70 ; Door Trim Panels; Rear Door Trim Panel, Removing and Installing .



## 2.5 Left/Right Front Treble Speaker -R20- / -R22- , Removing and Installing

The Left Front Treble Speaker - R20- / Right Front Treble Speaker - R22- are installed inside the A-pillars.

Removing and installing on the left and right sides is identical.

The Left Front Treble Speaker - R20- / Right Front Treble Speaker - R22- are part of the A-pillar trim panels and cannot be replaced separately. The A-pillar trim must be replaced if the speaker is faulty.



#### Note

*Be sure to note the color code for the trim when ordering a replacement part.*

#### Removing

- Switch off the ignition and all electrical consumers and remove the ignition key.
- Remove the A-pillar trim. Refer to ➤ Body Interior; Rep. Gr. 70 ; Vehicle Interior Trim Panels; A-Pillar Center Trim, Removing and Installing .



- Release and disconnect the connector -arrow- on the A-pillar.

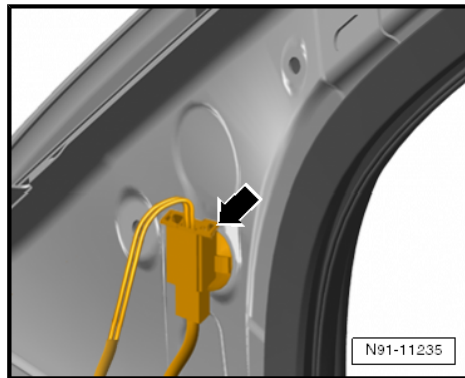
### Installing

Install in reverse order of removal.



### Note

*Be sure to note the color code for the trim when ordering a replacement part.*



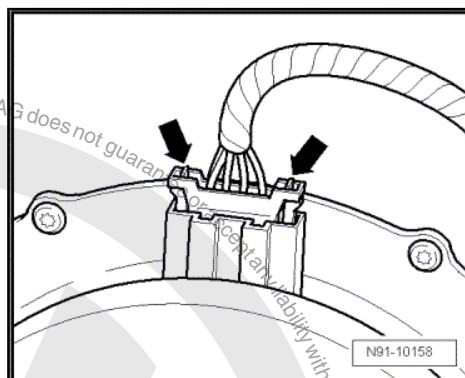
## 2.6 Left/Right Rear Bass Speaker -R15- / -R17- , Removing and Installing

The Left Rear Bass Speaker - R15- / Right Rear Bass Speaker - R17- are installed in the rear doors.

Removing and installing on the left and right sides is identical.

### Removing

- Switch off the ignition and all electrical consumers and remove the ignition key.
- Remove the rear door trim panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Door Trim Panels; Rear Door Trim Panel, Removing and Installing .
- Unlock and disconnect the connector -arrows-.



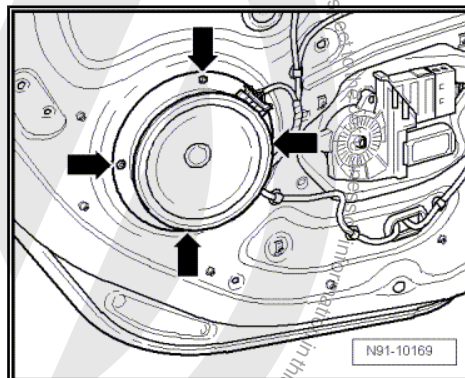
- Drill out the rivets -arrows- and remove the speaker.



### Caution

*Always remove any shavings resulting from the drilling from the door, otherwise they may cause corrosion damage later.*

*If the paint on the door frame gets damaged during drilling, touch-up immediately.*



### Installing

- There are special pop rivets for installing the new speaker. Refer to the Parts Catalog.

Install in reverse order of removal.





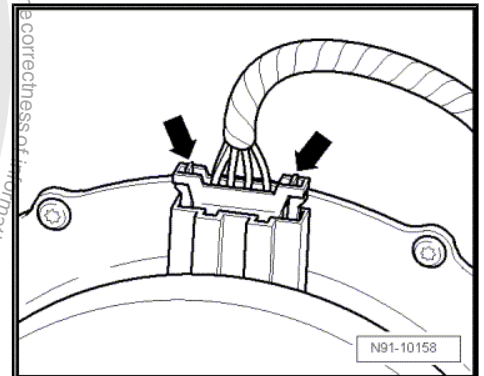
## 2.7 Left/Right Front Bass Speaker -R21- / -R23- Removing and Installing

The Left Front Bass Speaker - R21- / Right Front Bass Speaker - R23- are installed in the front doors.

Removing and installing on the left and right sides is identical.

### Removing

- Switch off the ignition and all electrical consumers and remove the ignition key.
- Remove the front door trim panel. Refer to ➤ Body Interior; Rep. Gr. 70 ; Door Trim Panels; Front Door Trim Panel Bracket, Removing and Installing .
- Unlock and disconnect the connector -arrows-.



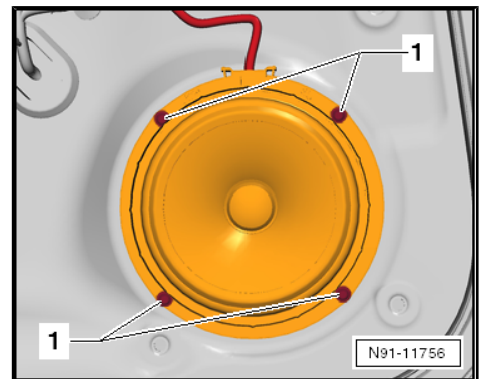
- Drill out the rivets -1- and remove the speaker.



### Caution

*Always remove any shavings resulting from the drilling from the door, otherwise they may cause corrosion damage later.*

*If the paint on the door frame gets damaged during drilling, touch-up immediately.*



### Installing

- There are special pop rivets for installing the new speaker. Refer to the Parts Catalog.

Install in reverse order of removal.

## 2.8 Subwoofer - R211- , Removing and Installing

The Subwoofer - R211- is attached to the rear shelf from inside the luggage compartment.

### Removing

- Switch off the ignition and all electrical consumers and remove the ignition key.
- Open the luggage compartment.



- Disconnect the connector -3-



#### Caution

*If the Subwoofer - R211- starts to fall down after removing the first bolt, then the mounting tabs still connected will get damaged. Have a second technician hold the Subwoofer - R211- to keep it from falling down.*

- Remove the screws -arrows-.
- Remove the Subwoofer - R211- -2- from the luggage compartment -1-.

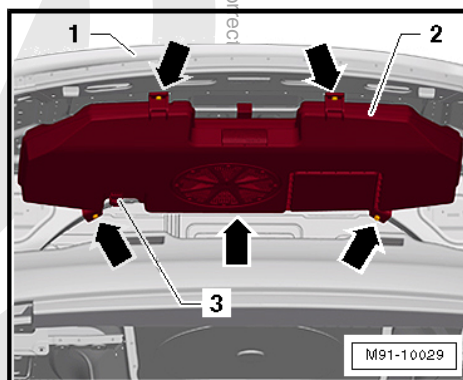
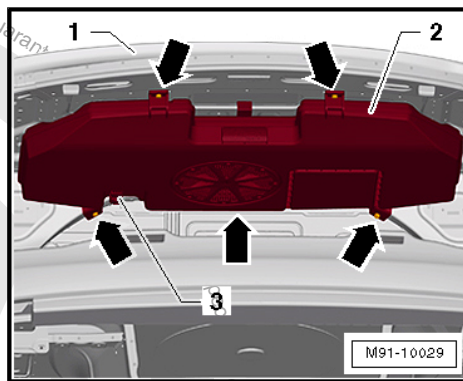
#### Installing

Install in reverse order of removal.



#### Caution

*If the Subwoofer - R211- starts to fall down after installing the first bolt, then the mounting tabs still connected will get damaged. Have a second technician hold the Subwoofer - R211- to keep it from falling down.*



#### Tightening Specifications

- ♦ Refer to  
⇒ [“2.2 Component Location Overview - Sound System”, page 9](#)

## 2.9 Connector Assignments

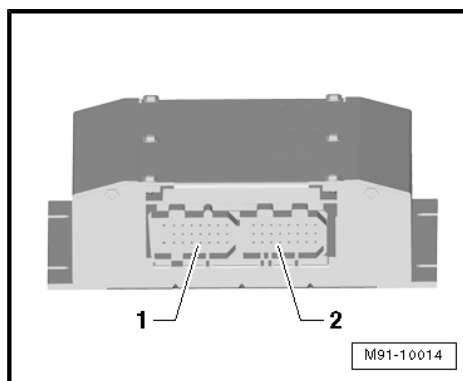
⇒ [“2.9.1 Connector Assignments, Amplifier R12 , with 23/24-Pin Connector”, page 14](#)

⇒ [“2.9.2 Connector Assignments, Amplifier R12 , with 38-Pin Connector”, page 16](#)

### 2.9.1 Connector Assignments, Amplifier - R12- , with 23/24-Pin Connector

#### Amplifier - R12-

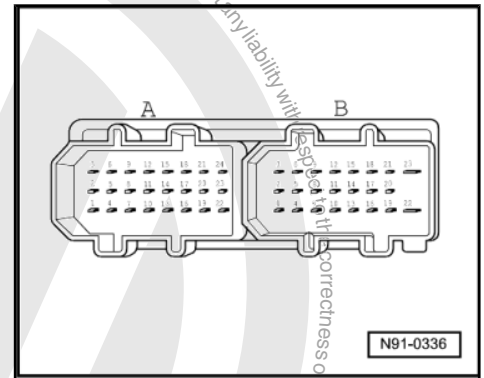
- 1 - Multi-pin connector B, 23-pin
- 2 - Multi-pin connector A, 24-pin





## 1 - Multi-Pin Connector B, 23-Pin

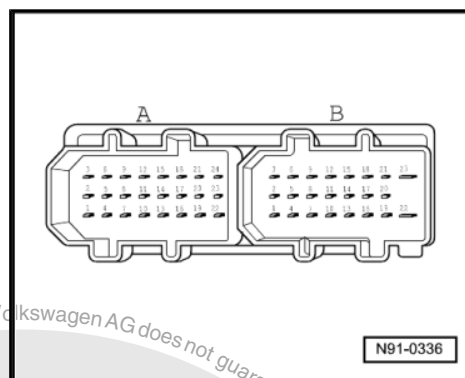
- 1 - CAN Bus Low
- 2 - Left Front Midrange Speaker - R103- (-)
- 3 - Left Front Midrange Speaker - R103- (+)
- 4 - CAN Bus High
- 5 - Not Assigned
- 6 - Left Front Treble Speaker - R20- (-)
- 7 - Not Assigned
- 8 - Not Assigned
- 9 - Left Front Treble Speaker - R20- (+)
- 10 - Not Assigned
- 11 - Right Front Bass Speaker - R23- (+)
- 12 - Right Front Bass Speaker - R23- (+)
- 13 - Not Assigned
- 14 - Not Assigned
- 15 - Right Front Treble Speaker - R22- (+)
- 16 - Terminal 31
- 17 - Not Assigned
- 18 - Right Front Treble Speaker - R22- (-)
- 19 - Terminal 31
- 20 - Terminal 30
- 21 - Terminal 30
- 22 - Terminal 31
- 23 - Terminal 30





## 2 - Multi-Pin Connector A, 24-Pin

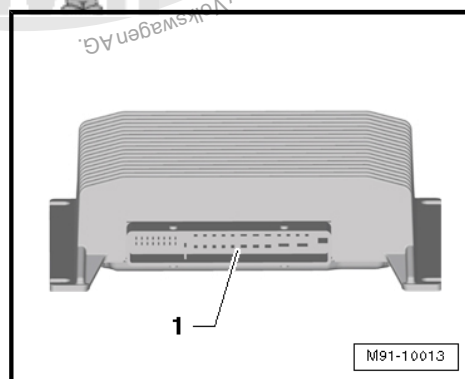
- 1 - Left Rear Treble Speaker - R14- (+)
- 2 - Right Rear Bass Speaker - R17- (-)
- 3 - Right Rear Bass Speaker - R17- (-)
- 4 - Left Rear Bass Speaker - R15- (+)
- 5 - Right Rear Treble Speaker - R16- (-)
- 6 - Right Rear Treble Speaker - R16- (+)
- 7 - Left Rear Treble Speaker - R14- (-)
- 8 - Left Front Bass Speaker - R21- (-)
- 9 - Left Front Bass Speaker - R21- (+)
- 10 - Left Rear Bass Speaker - R15- (-)
- 11 - Right Front Midrange Speaker - R104- (-)
- 12 - Right Front Midrange Speaker - R104- (-)
- 13 - Not Assigned
- 14 - Left Rear Signal Input (-)
- 15 - Left Rear Signal Input (+)
- 16 - Not Assigned
- 17 - Right Rear Signal Input (-)
- 18 - Right Rear Signal Input (+)
- 19 - Control In (Optional)
- 20 - Left Front Signal Input (-)
- 21 - Left Front Signal Input (+)
- 22 - Not Assigned
- 23 - Right Front Signal Input (-)
- 24 - Right Front Signal Input (+)



## 2.9.2 Connector Assignments, Amplifier - R12- , with 38-Pin Connector

### Amplifier - R12-

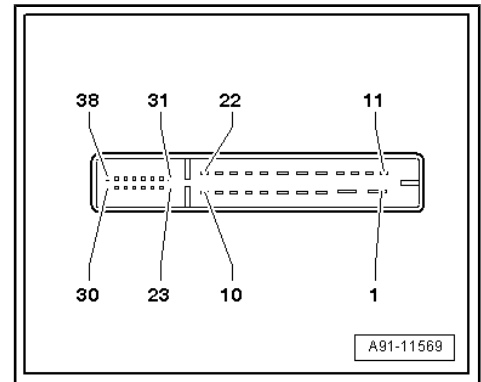
- 1 - Multi-Pin Connector, 38-Pin





## 1 - Multi-Pin Connector, 38-Pin

- 1 - Terminal 31
- 2 - Terminal 30
- 3 - Right Front Bass Speaker - R23- (-)
- 4 - Subwoofer in Rear Shelf - R157- (-) 2
- 5 - Subwoofer in Rear Shelf - R157- (+) 1
- 6 - Left Front Bass Speaker - R21- (-)
- 7 - Right Front Treble Speaker - R22- (-)
- 8 - Left Front Treble Speaker - R20- (+)
- 9 - Left Rear Bass Speaker - R15- (+)
- 10 - Right Rear Bass Speaker - R17- (-)
- 11 - Right Front Midrange Speaker - R104- (-)
- 12 - Right Front Midrange Speaker - R104- (+)
- 13 - Left Front Midrange Speaker - R103- (+)
- 14 - Left Front Midrange Speaker - R103- (-)
- 15 - Right Front Bass Speaker - R23- (+)
- 16 - Subwoofer in Rear Shelf - R157- (+) 2
- 17 - Subwoofer in Rear Shelf - R157- (-) 1
- 18 - Left Front Bass Speaker - R21- (+)
- 19 - Right Front Treble Speaker - R22- (+)
- 20 - Left Front Treble Speaker - R20- (-)
- 21 - Left Rear Bass Speaker - R15- (-)
- 22 - Right Rear Bass Speaker - R17- (+)
- 23 - CAN Bus Low
- 24 - Not Assigned
- 25 - Not Assigned
- 26 - Not Assigned
- 27 - Left Rear Signal Input (-)
- 28 - Right Rear Signal Input (-)
- 29 - Left Front Signal Input (-)
- 30 - Right Front Signal Input (-)
- 31 - CAN Bus High
- 32 - Not Assigned
- 33 - Not Assigned
- 34 - Not Assigned
- 35 - Left Rear Signal Input (+)
- 36 - Right Rear Signal Input (+)
- 37 - Left Front Signal Input (+)
- 38 - Right Front Signal Input (+)





## 3 Antenna Systems

⇒ [“3.1 Overview - Antenna Systems”, page 18](#)

⇒ [“3.2 Component Location Overview - Antenna Systems”, page 18](#)

⇒ [“3.3 FM Frequency Filter in Negative Wire R178 / FM Frequency Filter in Positive Wire R179 , Removing and Installing”, page 20](#)

⇒ [“3.4 Antenna Amplifier, Removing and Installing”, page 21](#)

⇒ [“3.5 Roof Antenna RX5 , Removing and Installing”, page 21](#)

⇒ [“3.6 Vehicle GPS Antennas, Removing and Installing”, page 22](#)

### 3.1 Overview - Antenna Systems

The antennas are integrated inside the rear window and roof antenna.

The antenna system consists of the following parts:

- ◆ Antenna - R11- / Radio Antenna 2 - R93- in the rear window
- ◆ Antenna Amplifier - R24- , AM/FM, on the right side of the rear window, C-pillar
- ◆ Antenna Amplifier 2 - R111- , FM2/optional DAB, on the left side of the rear window, C-pillar
- ◆ Satellite Tuner Antenna - R172- , SAT, inside the roof antenna
- ◆ GPS Antenna - R50- , GPS, inside the roof antenna
- ◆ Telephone Antenna - R65- , GSM, inside the roof antenna

The diversity antenna system serves to improve and optimize the reception quality in the vehicle. It is not installed with the Low Entry, RCD 210 and RNS 300 radios.

For the vehicle positioning system, the Vehicle GPS Antenna 1 - R259- (GPS) and Vehicle GPS Antenna 2 - R260- (GSM) are installed on the rear bumper.

#### Repairing Antenna Wires

A new repair concept has been developed for repairing antenna wires. Instead of a complete antenna wire, connecting wires of different lengths and various adapter leads are now available as replacement parts.

Antenna wires, repairing. Refer to ⇒ Electrical Equipment; Rep. Gr. 97 ; Antenna Wires, Repairing .

### 3.2 Component Location Overview - Antenna Systems



# **1 - Antenna Amplifier 2 - R111-**

- ☐ FM2
- ☐ Optional: DAB
- ☐ Removing and Installing. Refer to  
⇒ ["3.4 Antenna Amplifier, Removing and Installing", page 21](#) .

## **2 - Bolt**

- ☐ 2 Nm

## **3 - Nut**

- ☐ 7 Nm

## **4 - Roof Antenna - RX5-**

- ☐ GSM/GPS/SAT/parking heater remote control (Telestart)
- ☐ Removing and Installing. Refer to  
⇒ ["3.5 Roof Antenna RX5, Removing and Installing", page 21](#) .

## **5 - Bolt**

- ☐ 2 Nm

## **6 - Antenna Amplifier - R24-**

- ☐ AM/FM
- ☐ Removing and Installing. Refer to  
⇒ ["3.4 Antenna Amplifier, Removing and Installing", page 21](#) .

## **7 - FM Frequency Filter in Negative Wire - R178-**

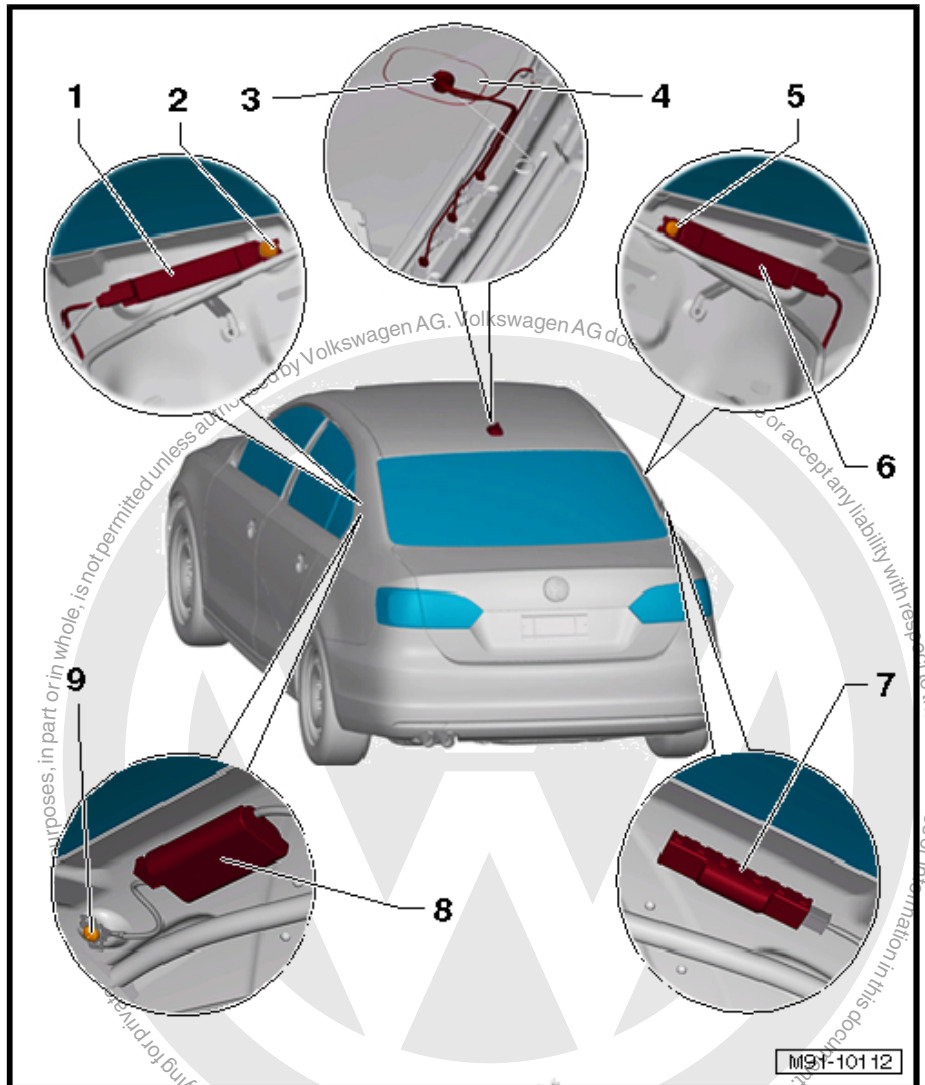
- ☐ Removing and Installing. Refer to  
⇒ ["3.3 FM Frequency Filter in Negative Wire R178 / FM Frequency Filter in Positive Wire R179, Removing and Installing", page 20](#) .

## **8 - FM Frequency Filter in Positive Wire - R179-**

- ☐ Removing and Installing. Refer to  
⇒ ["3.3 FM Frequency Filter in Negative Wire R178 / FM Frequency Filter in Positive Wire R179, Removing and Installing", page 20](#) .

## **9 - Bolt**

- ☐ 2 Nm







### 3.3 FM Frequency Filter in Negative Wire - R178- / FM Frequency Filter in Positive Wire - R179- , Removing and Installing

⇒ ["3.3.1 FM Frequency Filter in Negative Wire R178 , Removing and Installing", page 20](#)

⇒ ["3.3.2 FM Frequency Filter in Positive Wire R179 , Removing and Installing", page 20](#)

#### 3.3.1 FM Frequency Filter in Negative Wire - R178- , Removing and Installing

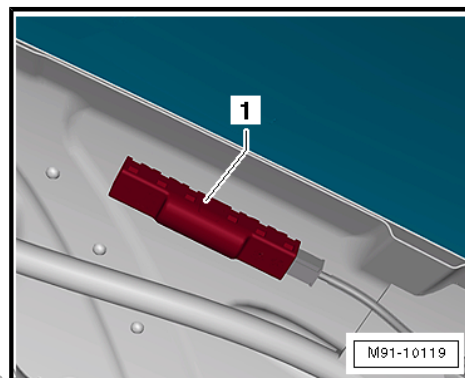
The FM Frequency Filter in Negative Wire - R178- is located on the right C-pillar.

##### Removing

- Switch off the ignition and all electrical consumers and remove the ignition key.
- Remove the C-pillar trim panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Vehicle Interior Trim Panels; C-Pillar Trim Panel, Removing and Installing .
- Release and disconnect the connectors from the FM Frequency Filter in Negative Wire - R178- -1-.
- Unclip the FM Frequency Filter in Negative Wire - R178- -1- and remove it from the C-pillar.

##### Installing

Install in reverse order of removal.



#### 3.3.2 FM Frequency Filter in Positive Wire - R179- , Removing and Installing

The FM Frequency Filter in Positive Wire - R179- is located on the left C-pillar.

##### Removing

- Switch off the ignition and all electrical consumers and remove the ignition key.
- Remove the C-pillar trim panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Vehicle Interior Trim Panels; C-Pillar Trim Panel, Removing and Installing .





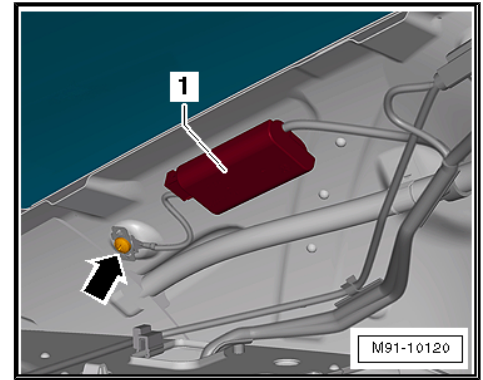
- Release and disconnect the connectors from the FM Frequency Filter in Positive Wire - R179- -1-.
- Remove the screw -arrow-.
- Remove the FM Frequency Filter in Positive Wire - R179- -1- from the C-pillar.

#### Installing

Install in reverse order of removal.

#### Tightening Specifications

- ◆ Refer to  
⇒ ["3.2 Component Location Overview - Antenna Systems", page 18](#)



### 3.4 Antenna Amplifier, Removing and Installing

The Antenna Amplifier - R24- / Antenna Amplifier 2 - R111- are located on the left and right C-pillars. Removing and installing is identical.

#### Removing

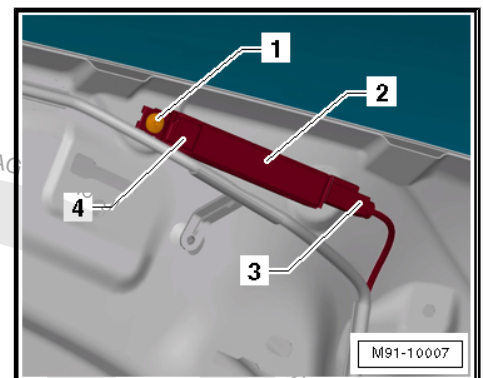
- Remove the C-pillar trim panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Vehicle Interior Trim Panels; C-Pillar Trim Panel, Removing and Installing .
- Release and disconnect the connectors -3- and -4-.
- Remove the screw -1- and then remove the antenna amplifier -2- from the C-pillar.

#### Installing

Install in reverse order of removal, noting the following:

#### Tightening Specifications

- ◆ Refer to  
⇒ ["3.2 Component Location Overview - Antenna Systems", page 18](#)



### 3.5 Roof Antenna - RX5- , Removing and Installing

#### Removing

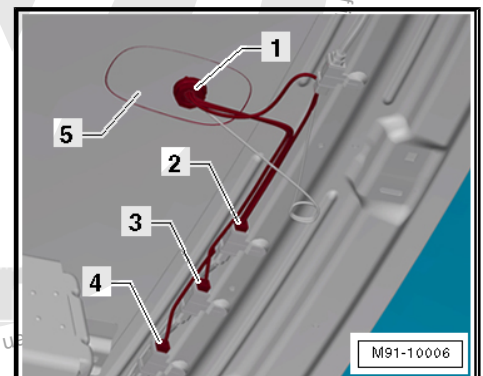
- Switch off the ignition and all electrical consumers and remove the ignition key.
- Lower the back of the headliner. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Roof Trim Panels .

Depending on the equipment level, the roof antenna can have one to four wires. These are attached on the roof crossmember -2 through 4-.

- Release and disconnect the connectors -2 through 4-. Free up the antenna wires up to the roof antenna -5-.
- Remove the nut -1- and remove the roof antenna -5- upward.

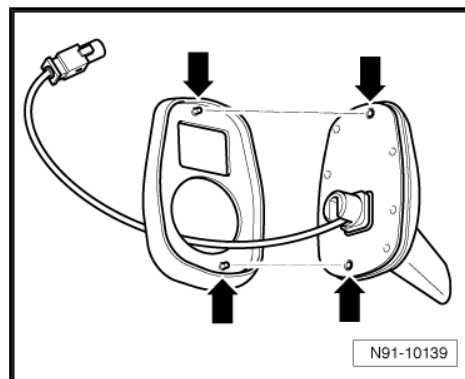
#### Installing

Install in reverse order of removal. Note the following:





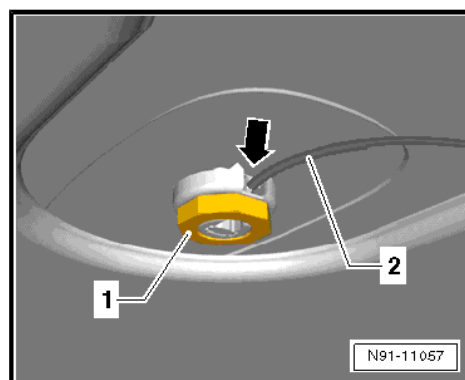
- When inserting the roof antenna, ensure that the seal is properly seated. Both guide protrusions of the seal must be seated in the appropriate holes -arrows- in antenna base.



- Make sure the antenna wires -1- are routed correctly through the opening in the nut -2- after mounting the roof antenna.

#### Tightening Specifications

- ◆ Refer to  
⇒ ["3.2 Component Location Overview - Antenna Systems", page 18](#)



### 3.6 Vehicle GPS Antennas, Removing and Installing

The Vehicle GPS Antenna 1 - R259- and Vehicle GPS Antenna 2 - R260- are located in the rear bumper cover.

#### Removing

- Turn off the ignition and all electrical equipment and remove the ignition key.

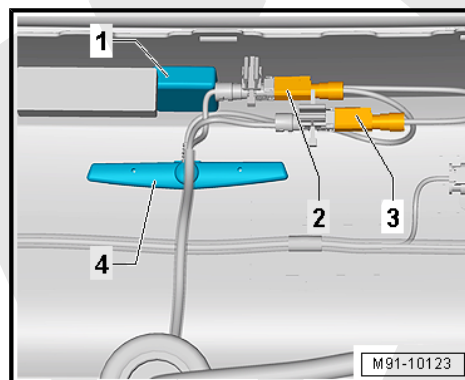
The vehicle GPS antennas are bonded to the bumper cover.

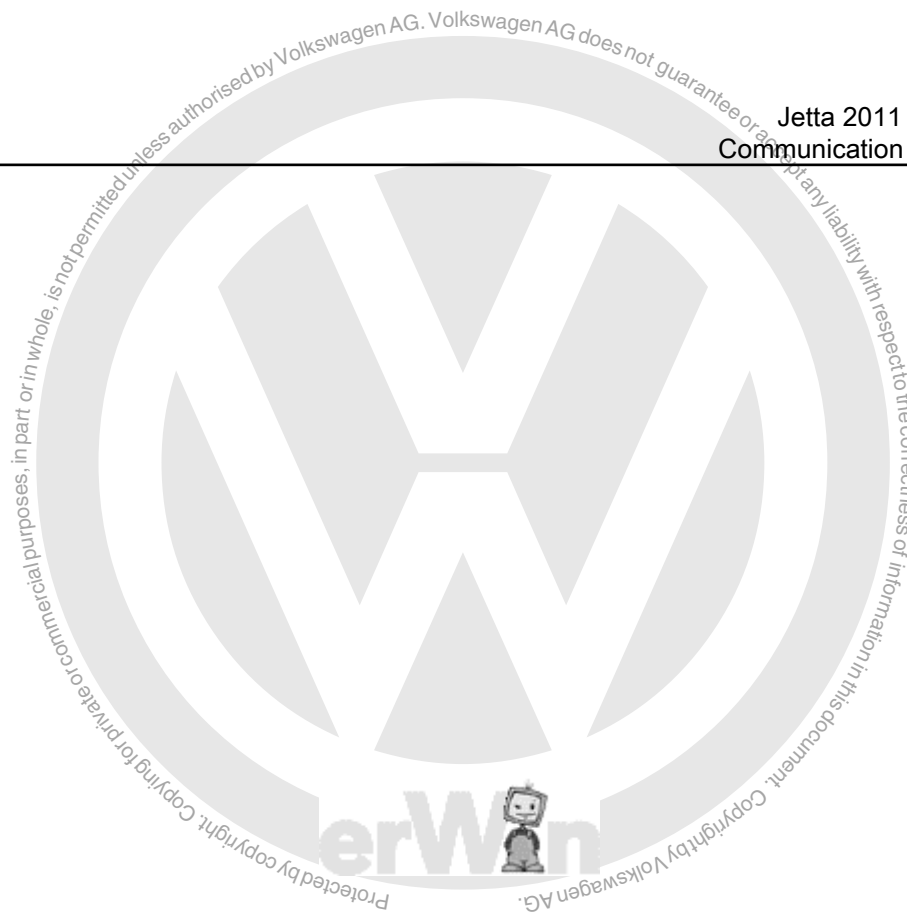
- Remove the rear bumper cover. Refer to ⇒ Body Exterior; Rep. Gr. 63 ; Rear Bumper Cover; Overview - Rear Bumper Cover .
- Release and disconnect the connectors -2 and 3-
- Remove the vehicle GPS antennas -1 and 4- from the bumper cover using a suitable tool.

#### Installing

- Clean the adhesive areas thoroughly with isopropyl (degreaser).
- Remove the adhesive film cover from the vehicle GPS antenna.
- Forcefully press the vehicle GPS antenna onto the adhesive area and secure the wires up to the couplings.

Install in reverse order of removal.







## 4 Radio

⇒ [“4.1 Radio Components”, page 24](#)

⇒ [“4.2 Component Location Overview - Radio”, page 42](#)

⇒ [“4.3 Overview - Radio”, page 44](#)

⇒ [“4.4 Radio, Removing and Installing”, page 44](#)

⇒ [“4.5 Connector Assignments”, page 46](#)

### 4.1 Radio Components

⇒ [“4.1.1 Overview - Radio, RCD 210”, page 24](#)

⇒ [“4.1.2 Overview - Radio, RCD 300+”, page 27](#)

⇒ [“4.1.3 Overview - Radio, RCD 030+”, page 28](#)

⇒ [“4.1.4 Overview - Radio, RCD 310”, page 29](#)

⇒ [“4.1.5 Overview - Radio, Premium 8”, page 31](#)

⇒ [“4.1.6 Overview - Radio, RCD 510”, page 35](#)

⇒ [“4.1.7 Overview - Radio, RCD 510+”, page 39](#)

⇒ [“4.1.8 Overview - Radio, RCD 320G”, page 42](#)

#### 4.1.1 Overview - Radio, RCD 210

##### Radio RCD 210

Familiarity with the function and operation is needed if there are customer concerns. Refer to the Owner's Manual.

The RCD 210 radio system offers the following features:

- ◆ Monochrome display
- ◆ FM tuner
- ◆ CD player
- ◆ UHV Low
- ◆ 2 or 4 speaker channels, each with 20 W
- ◆ Connection for the External Audio Source Connection - R199-
- ◆ Connection for an external CD Changer - R41-
- ◆ Optional support for the multifunction steering wheel
- ◆ Convenience coding

It is not possible to play the following CD formats:

- ◆ 8 cm CDs
- ◆ “Mix CDs” (CDs containing files and audio files)

The RCD 210 is OBD-capable.

For troubleshooting, use the Vehicle Diagnostic Tester in the “Guided Fault Finding” function.

##### Repairing Antenna Wires

Antenna wires, repairing. Refer to ⇒ Electrical Equipment; Rep. Gr. 97 ; Antenna Wires, Repairing .

##### Electronic Anti-Theft Protection

The Radio - R- is equipped with an electronic anti-theft protection, which operates in conjunction with the instrument cluster. The radio code is stored internally inside the Radio - R- and inside the instrument cluster.





After disconnecting the power supply to the Radio - R- , it is ready for use and the radio code does not need to be entered again. The requirement is that the anti-theft coding must be activated for the first time and that the Radio - R- is reconnected in the same vehicle.

Use the Vehicle Diagnostic Tester to get the radio code. The radio card and the label on the Radio - R- that were used in the past are no longer used.



#### Note

*The Vehicle Diagnostic Tester must be "online" to retrieve the radio code and the user must be authorized to access radio codes.*

#### Deactivating the electronic anti-theft protection:

- Connect the Vehicle Diagnostic Tester .
- Select the **Guided Fault Finding** mode.
- Use the **GO TO** button to select the "function/component selection" and the following menu options one after the other:
  - ◆ Body
  - ◆ Electrical Equipment
  - ◆ 01-OBD-capable system
  - ◆ Corresponding radio system
  - ◆ Radio system functions
  - ◆ Radio code inquiry

Authorization will be requested from the system: Then the operating data, the VIN and the Radio - R- device number will be automatically read out.



#### Note

- ◆ *The radio code for the electronic anti-theft system is attached to the radio card next to the serial number. Refer to the Owner's Manual.*
- ◆ *For reasons of safety, do not leave the radio card in the vehicle. Get the radio code from the customer.*
- ◆ *If a Radio - R- is being replaced, then use the radio code of the replacement radio.*
- ◆ *Tell the customer the radio code has been changed.*

- Get the radio code.
- Switch on the Radio - R- .

The Radio - R- automatically displays "SAFE" and then "1000".

- Enter the radio code by using the radio station buttons 1 through 4. Use the first radio station button to enter the first digit of the radio code. Use the second radio station button to enter the second digit.
- Press the **arrow** and hold it until the electronic anti-theft protection is activated. This is indicated by a short signal sound.

If the radio code has been entered correctly into Radio - R- , a radio frequency appears on the display.



It is possible to enter the radio code again if it was entered incorrectly. If radio code is entered incorrectly twice, then the Radio - R- will lock up for one hour. Leave the Radio - R- on and the key in the ignition lock. The process can be repeated again after an hour. Note: Always two attempts, after that the Radio - R- will lock up for one hour.





## 4.1.2 Overview - Radio, RCD 300+

### Radio RCD 300+

Familiarity with the function and operation is needed if there are customer concerns. Refer to the Owner's Manual.

The RCD 300+ radio system offers the following features:

- ◆ Monochrome display
- ◆ CD player
- ◆ UHV Low
- ◆ 2 or 4 speaker channels, each with 20 W
- ◆ Connection for an external CD Changer - R41-
- ◆ USB Connection
- ◆ SD Card Reader
- ◆ Optional support for the multifunction steering wheel
- ◆ Convenience coding

It is not possible to play the following CD formats:

- ◆ 8 cm CDs
- ◆ "Mix CDs" (CDs containing files and audio files)

The RCD 300+ is equipped with OBD.

For troubleshooting, use the Vehicle Diagnostic Tester in the "Guided Fault Finding" function.

### Repairing Antenna Wires

Antenna wires, repairing. Refer to ⇒ Electrical Equipment; Rep. Gr. 97 ; Antenna Wires, Repairing .

### Electronic Anti-Theft Protection

The Radio - R- is equipped with an electronic anti-theft protection, which operates in conjunction with the instrument cluster. The radio code is stored internally inside the Radio - R- and inside the instrument cluster.

After disconnecting the power supply to the Radio - R- , it is ready for use and the radio code does not need to be entered again. The requirement is that the electronic anti-theft system must be activated for the first time and that the Radio - R- is reconnected in the same vehicle.

After first activation of electronic anti-theft system, an internal radio code is stored in Radio - R- and in the instrument cluster. If the Radio - R- voltage is now cut off for repair work, a data exchange is then performed between the Radio - R- and instrument cluster after reconnecting the voltage supply.

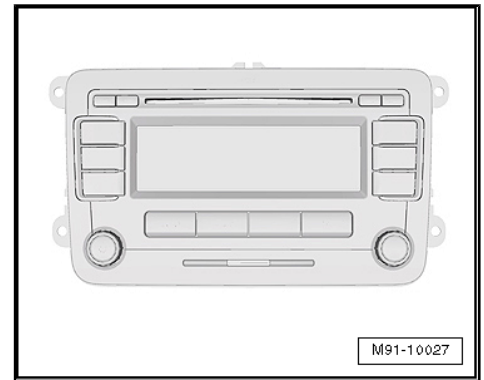
During this, the internal radio code of the Radio - R- is compared to the one in the instrument cluster. If the radio code is identical, the instrument cluster recognizes that the Radio - R- connected belongs to that vehicle and the Radio - R- can be used immediately. The radio code does not need to be entered again.

If the Radio - R- is replaced, the radio code must be entered.

### Deactivating the electronic anti-theft protection:

Reactivating a locked Radio - R- is only possible by entering the correct radio code number for the electronic anti-theft protection.

- Get the radio code.
- Switch on the Radio - R- .





The Radio - R- automatically displays "SAFE" and then "1000".

Position of radio code number to be set is indicated in display near four buttons with "X".

- Enter the radio code in the correct sequence using the four function buttons displayed. Keep pushing the function button until the correct number appears in the center of the display.
- Press the function button next to the word "ENTER". Unit is ready for operation again and switches to last operating state.

It is possible to enter the radio code again if it was entered incorrectly. If radio code is entered incorrectly twice, then the Radio - R- will lock up for one hour. Leave the Radio - R- on and the key in the ignition lock. The process can be repeated again after an hour. Note: Always two attempts, after that the Radio - R- will lock up for one hour.

### 4.1.3 Overview - Radio, RCD 030+

#### Radio RCD 030+

Familiarity with the function and operation is needed if there are customer concerns. Refer to the Owner's Manual.

The radio system RCD 030+ offers the following features:

- ◆ Monochrome display
- ◆ CD player
- ◆ UHV Low
- ◆ 2 or 4 speaker channels, each with 20 W
- ◆ Connection for an external CD Changer - R41-
- ◆ USB Connection
- ◆ SD Card Reader
- ◆ Optional support for the multifunction steering wheel
- ◆ Convenience coding

It is not possible to play the following CD formats:

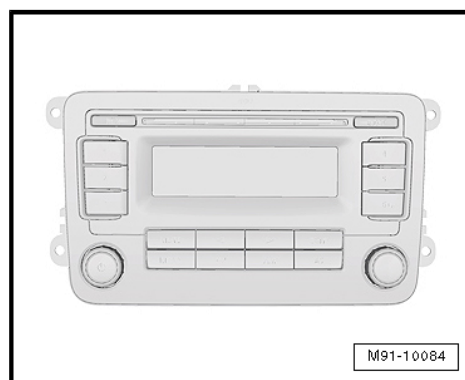
- ◆ 8 cm CDs
- ◆ "Mix CDs" (CDs containing files and audio files)

The RCD 030+ is equipped with OBD.

For troubleshooting, use the Vehicle Diagnostic Tester in the "Guided Fault Finding" function.

#### Repairing Antenna Wires

Antenna wires, repairing. Refer to ➔ Electrical Equipment; Rep. Gr. 97 ; Antenna Wires, Repairing .







#### 4.1.4 Overview - Radio, RCD 310

##### Radio RCD 310

Familiarity with the function and operation is needed if there are customer concerns. Refer to the Owner's Manual.

The RCD 310 radio system offers the following features:

- ◆ 4 speaker channels, each with 20 W
- ◆ CD player
- ◆ Monochrome display
- ◆ Connection for an external CD Changer - R41-
- ◆ Connection for Multimedia System Control Module - J650-
- ◆ External Audio Source Connection - R199-
- ◆ UHV Low (stereo input)
- ◆ Connection for external sound amplifier ( Amplifier - R12- )
- ◆ Integrated optional DAB tuner
- ◆ Convenience coding
- ◆ Optional support for the multifunction steering wheel
- ◆ OPS (optical parking system) on the radio display
- ◆ A/C information shown in the radio display

It is not possible to play the following CD formats:

- ◆ 8 cm CDs
- ◆ "Mix CDs" (CDs containing files and audio files)

The RCD 310 is equipped with OBD.

For troubleshooting, use the Vehicle Diagnostic Tester in the "Guided Fault Finding" function.

##### Repairing Antenna Wires

Antenna wires, repairing. Refer to ⇒ Electrical Equipment; Rep. Gr. 97 ; Antenna Wires, Repairing .

##### Electronic Anti-Theft Protection

The Radio - R- is equipped with anti-theft coding, which operates in conjunction with the instrument cluster.

After disconnecting the power supply to the Radio - R- , it is ready for use and the anti-theft code does not need to be entered again. The requirement is that the anti-theft coding must be activated for the first time and that the Radio - R- is reconnected in the same vehicle.

Use the Vehicle Diagnostic Tester to get the anti-theft code. The radio card and the label on the Radio - R- that were used in the past are no longer used.

The Vehicle Diagnostic Tester must be connected "online" to determine the anti-theft code. The user must have the proper authorization to access the radio code.

Reactivating a locked Radio - R- is only possible by entering the correct anti-theft code for anti-theft coding.

##### Using the Vehicle Diagnostic Tester to get the Anti-Theft Code:

- Connect the Vehicle Diagnostic Tester .
- Select the Guided Fault Finding mode.





– Use the **GO TO** button to select the “function/component selection” and the following menu options one after the other:

- ◆ Body
- ◆ Electrical Equipment
- ◆ 01-OBD-capable system
- ◆ Corresponding radio system
- ◆ Radio system functions
- ◆ Radio code inquiry

Authorization will be requested from the system: Then the operating data, the VIN and the Radio - R- device number will be automatically read out.



#### Note

*The Vehicle Diagnostic Tester may not be able read the Radio - R- device number when a new Radio - R- is installed. In this case, enter the device number manually. The device number can be found on a sticker on the Radio - R- and is also stamped on the side of the device.*

The Vehicle Diagnostic Tester will display the anti-theft code.

The anti-theft code must be entered manually into the Radio - R- .

#### Deactivating the electronic anti-theft protection:

– Switch on the Radio - R- .

“SAFE” appears in the display for approximately 10 seconds, after that “1000” is displayed.

– Enter the anti-theft code by pushing the station buttons repeatedly until the correct code number sequence is displayed.

“OK” appears in the display after the four-digit code number has been entered.

– “OK” appears in the display when the correct anti-theft code has been entered.

The Radio - R- is enabled and is ready to be used.

If an incorrect anti-theft code is entered, the code can be corrected immediately in another attempt. If anti-theft code is entered incorrectly twice, then the Radio - R- will lock up for one hour. Leave the Radio - R- and ignition on. The procedure for deactivating the anti-theft coding can be repeated after one hour.

Note: the anti-theft code can be entered only two times. After that, the Radio - R- locks up for one hour.



## 4.1.5 Overview - Radio, Premium 8

### Radio Premium 8

Familiarity with the function and operation is needed if there are customer concerns. Refer to the Owner's Manual.

The Premium 8 radio system offers the following features:

- ◆ Display: TFT (thin film transistor), touch screen
- ◆ Integrated 6-disc CD changer
- ◆ SD Card Reader
- ◆ UHV Low/Premium (stereo input)
- ◆ 4 speaker channels, each with 20 W
- ◆ Connection for Multimedia System Control Module - J650-
- ◆ External Audio Source Connection - R199-
- ◆ Connection for an external CD Changer - R41-
- ◆ Connection for external sound amplifier ( Amplifier - R12- )
- ◆ OPS (optical parking system) on the radio display
- ◆ A/C information shown in the radio display
- ◆ Optional support for the multifunction steering wheel
- ◆ Convenience coding
- ◆ TIM (traffic information memory)
- ◆ Optional integrated Satellite Radio - R146-

It is not possible to play the following CD formats:

- ◆ 8 cm CDs
- ◆ "Mix CDs" (CDs containing files and audio files)

The internal CD changer has a transportation safeguard, which must be deactivated when a new Radio - R- is installed. Refer to ⇒ [page 31](#) . Likewise, the transportation safeguard must be switched on, before a removed Radio - R- can be shipped. The Radio - R- must be connected to a power supply when doing this.

The antenna ( Satellite Antenna - R170- ) for the Satellite Radio - R146- is located inside the roof antenna.

The Premium 8 is equipped with OBD.

For troubleshooting, use the Vehicle Diagnostic Tester in the "Guided Fault Finding" function.

### Repairing Antenna Wires

Antenna wires, repairing. Refer to ⇒ Electrical Equipment; Rep. Gr. 97 ; Antenna Wires, Repairing .

### Transportation Safeguard, Activating and Deactivating

The transportation safeguard must be activated before shipping the "RCD 510" and must be deactivated whenever a new Radio - R- is installed. This is done electronically using the buttons on the Radio - R- . After activating the transport protection, the internal CD changer is in the »transportation position«.

### Transportation Safeguard, Activating:

Status: "ON" The wire connections must be connected to the Radio - R- .



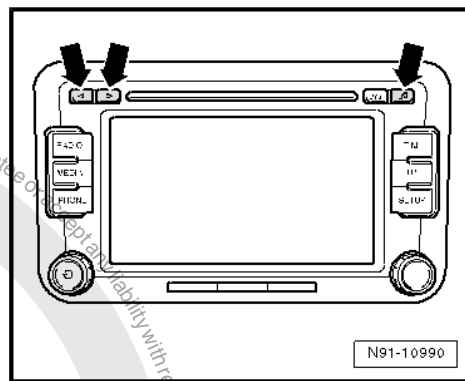


- Press and hold the buttons -arrows- together for at least five seconds.

“CDC transport protection activated” appears in the radio display once the CD changer has reached its transportation position.

#### Transportation Safeguard, Deactivating:

- Connect and install the Radio - R- .





- Press and hold the buttons -arrows- together for at least five seconds.

“CDC transport protection activated” appears in the radio display.

Underneath the “deactivating” button also appears.

- Press “deactivate” on the touch screen.

Now the transport protection is deactivated.

### Electronic Anti-Theft Protection

The Radio - R- is equipped with anti-theft coding, which operates in conjunction with the instrument cluster.

After disconnecting the radio power supply, the Radio - R- is ready for use again once the power supply is connected. The anti-theft code does not need to be entered again. The requirement is that the anti-theft coding must be activated for the first time and that the Radio - R- is reconnected in the same vehicle.

Use the Vehicle Diagnostic Tester to get the anti-theft code. The radio card and the label on the Radio - R- that were used in the past are no longer used.

The Vehicle Diagnostic Tester must be connected “online” to determine the anti-theft code. The user must have the proper authorization to access the radio code.

Reactivating a locked Radio - R- is only possible by entering the correct anti-theft code for anti-theft coding.

### Using the Vehicle Diagnostic Tester to get the Anti-Theft Code:

- Connect the Vehicle Diagnostic Tester .
- Select the **Guided Fault Finding** mode.
- Use the **GO TO** button to select the “function/component selection” and the following menu options one after the other:
  - ◆ Body
  - ◆ Electrical Equipment
  - ◆ 01-OBD-capable system
  - ◆ Corresponding radio system
  - ◆ Radio system functions
  - ◆ Radio code inquiry

Authorization will be requested from the system: Then the operating data, the VIN and the Radio - R- device number will be automatically read out.



### Note

*The Vehicle Diagnostic Tester may not be able read the Radio - R- device number when a new Radio - R- is installed. In this case, enter the device number manually. The device number can be found on a sticker on the Radio - R- and is also stamped on the side of the device.*

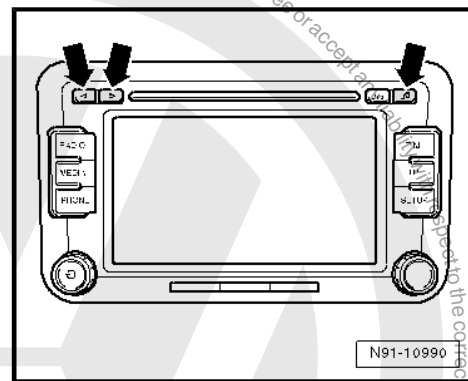
The Vehicle Diagnostic Tester will display the anti-theft code.

The anti-theft code must be entered manually into the Radio - R- .

### Deactivating the electronic anti-theft protection:

- Switch on the Radio - R- .

An input screen appears.





- Enter the correct anti-theft code using the keyboard on the input screen.
- Press the input button to confirm in the entry.

The Radio - R- is enabled and is ready to be used.

Use the correction button to erase an incorrect code.

If an incorrect anti-theft code is entered, the code can be corrected immediately in another attempt. If anti-theft code is entered incorrectly twice, then the Radio - R- will lock up for one hour. Leave the Radio - R- and ignition on. The procedure for deactivating the anti-theft coding can be repeated after one hour.

Note: the anti-theft code can be entered only two times. After that, the Radio - R- locks up for one hour.





## 4.1.6 Overview - Radio, RCD 510

### Radio RCD 510

Familiarity with the function and operation is needed if there are customer concerns. Refer to the Owner's Manual.

The RCD 510 radio system offers the following features:

- ◆ Display: TFT (thin film transistor), touch screen
- ◆ Integrated 6-disc CD changer
- ◆ SD Card Reader
- ◆ UHV Low/Premium (stereo input)
- ◆ Integrated optional DAB tuner
- ◆ 4 speaker channels, each with 20 W
- ◆ Connection for Multimedia System Control Module - J650-
- ◆ External Audio Source Connection - R199-
- ◆ Connection for an external CD Changer - R41-
- ◆ Connection for external sound amplifier ( Amplifier - R12- )
- ◆ OPS (optical parking system) on the radio display
- ◆ A/C information shown in the radio display
- ◆ Optional support for the multifunction steering wheel
- ◆ Convenience coding
- ◆ TIM (traffic information memory)

It is not possible to play the following CD formats:

- ◆ 8 cm CDs
- ◆ "Mix CDs" (CDs containing files and audio files)

The internal CD changer has a transportation safeguard, which must be deactivated when a new Radio - R- is installed. Refer to [⇒ page 35](#) . Likewise, the transportation safeguard must be switched on, before a removed Radio - R- can be shipped. The Radio - R- must be connected to a power supply when doing this.

The RCD 510 is equipped with OBD.

For troubleshooting, use the Vehicle Diagnostic Tester in the "Guided Fault Finding" function.

### Repairing Antenna Wires

Antenna wires, repairing. Refer to ⇒ Electrical Equipment; Rep. Gr. 97 ; Antenna Wires, Repairing .

### Transportation Safeguard, Activating and Deactivating

The transportation safeguard must be activated before shipping the "RCD 510" and must be deactivated whenever a new Radio - R- is installed. This is done electronically using the buttons on the Radio - R- . After activating the transport protection, the internal CD changer is in the »transportation position«.

### Transportation Safeguard, Activating:

Status: "ON" The wire connections must be connected to the Radio - R- .



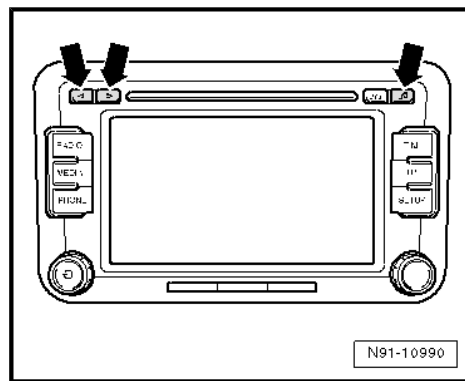


- Press and hold the buttons -arrows- together for at least five seconds.

“CDC transport protection activated” appears in the radio display once the CD changer has reached its transportation position.

**Transportation Safeguard, Deactivating:**

- Connect and install the Radio - R- .







- Press and hold the buttons -arrows- together for at least five seconds.

“CDC transport protection activated” appears in the radio display.

Underneath the “deactivating” button also appears.

- Press “deactivate” on the touch screen.

Now the transport protection is deactivated.

### Electronic Anti-Theft Protection

The Radio - R- is equipped with anti-theft coding, which operates in conjunction with the instrument cluster.

After disconnecting the radio power supply, the Radio - R- is ready for use again once the power supply is connected. The anti-theft code does not need to be entered again. The requirement is that the anti-theft coding must be activated for the first time and that the Radio - R- is reconnected in the same vehicle.

Use the Vehicle Diagnostic Tester to get the anti-theft code. The radio card and the label on the Radio - R- that were used in the past are no longer used.

The Vehicle Diagnostic Tester must be connected “online” to determine the anti-theft code. The user must have the proper authorization to access the radio code.

Reactivating a locked Radio - R- is only possible by entering the correct anti-theft code for anti-theft coding.

### Using the Vehicle Diagnostic Tester to get the Anti-Theft Code:

- Connect the Vehicle Diagnostic Tester
- Select the Guided Fault Finding mode.
- Use the GO TO button to select the “function/component selection” and the following menu options one after the other:

- ◆ Body
- ◆ Electrical Equipment
- ◆ 01-OBd-capable system
- ◆ Corresponding radio system
- ◆ Radio system functions
- ◆ Radio code inquiry

Authorization will be requested from the system: Then the operating data, the VIN and the Radio - R- device number will be automatically read out.



### Note

*The Vehicle Diagnostic Tester may not be able read the Radio - R- device number when a new Radio - R- is installed. In this case, enter the device number manually. The device number can be found on a sticker on the Radio - R- and is also stamped on the side of the device.*

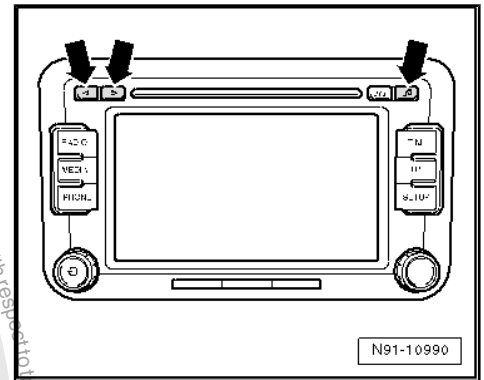
The Vehicle Diagnostic Tester will display the anti-theft code.

The anti-theft code must be entered manually into the Radio - R- .

### Deactivating the electronic anti-theft protection:

- Switch on the Radio - R- .

An input screen appears.





- Enter the correct anti-theft code using the keyboard on the input screen.
- Press the input button to confirm in the entry.

The Radio - R- is enabled and is ready to be used.

Use the correction button to erase an incorrect code.

If an incorrect anti-theft code is entered, the code can be corrected immediately in another attempt. If anti-theft code is entered incorrectly twice, then the Radio - R- will lock up for one hour. Leave the Radio - R- and ignition on. The procedure for deactivating the anti-theft coding can be repeated after one hour.

Note: the anti-theft code can be entered only two times. After that, the Radio - R- locks up for one hour.





## 4.1.7 Overview - Radio, RCD 510+

### Radio RCD 510+

Familiarity with the function and operation is needed if there are customer concerns. Refer to the Owner's Manual.

The RCD 510+ radio system offers the following features:

- ◆ Display: TFT (thin film transistor), touch screen
- ◆ Integrated 6-disc CD changer
- ◆ SD Card Reader
- ◆ UHV Low/Premium
- ◆ 4 speaker channels, each with 20 W
- ◆ Connection for Multimedia System Control Module - J650-
- ◆ Connection for the External Audio Source Connection - R199-
- ◆ Connection for an external CD Changer - R41-
- ◆ Connection for external sound amplifier ( Amplifier - R12- )
- ◆ USB Connection
- ◆ OPS (Optical Parking System)
- ◆ A/C information shown in the radio display
- ◆ Optional support for the multifunction steering wheel
- ◆ Convenience coding
- ◆ TIM (traffic information memory)

It is not possible to play the following CD formats:

- ◆ 8 cm CDs
- ◆ "Mix CDs" (CDs containing files and audio files)

The internal CD changer has a transportation safeguard, which must be deactivated when a new Radio - R- is installed. Refer to ⇒ [page 39](#) . Likewise, the transportation safeguard must be switched on, before a removed Radio - R- can be shipped. The Radio - R- must be connected to a power supply when doing this.

The RCD 510+ is equipped with OBD.

For troubleshooting, use the Vehicle Diagnostic Tester in the "Guided Fault Finding" function.

### Repairing Antenna Wires

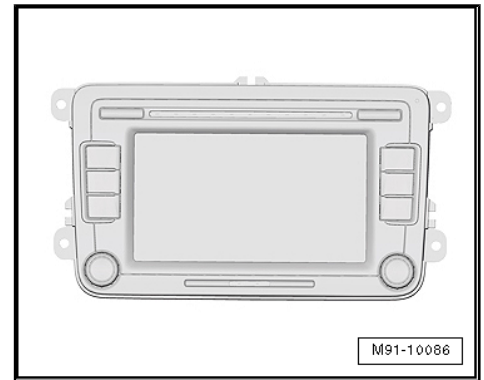
Antenna wires, repairing. Refer to ⇒ Electrical Equipment; Rep. Gr. 97 ; Antenna Wires, Repairing .

### Transportation Safeguard, Activating and Deactivating

The transportation safeguard must be activated before shipping the RCD 510 and must be deactivated whenever a new Radio - R- is installed. This is done electronically using the buttons on the Radio - R- . After activating the transport protection, the internal CD changer is in the »transportation position«.

### Transportation Safeguard, Activating:

Status: "ON" The wire connections must be connected to the Radio - R- .



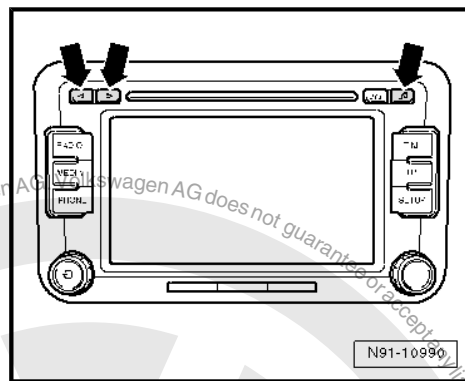


- Press and hold the buttons -arrows- together for at least five seconds.

“CDC transport protection activated” appears in the radio display once the CD changer has reached its transportation position.

#### Transportation Safeguard, Deactivating:

- Connect and install the Radio - R- .





- Press and hold the buttons -arrows- together for at least five seconds.

“CDC transport protection activated” appears in the radio display.

Underneath the “deactivating” button also appears.

- Press “deactivate” on the touch screen.

Now the transport protection is deactivated.

### Electronic Anti-Theft Protection

The Radio - R- is equipped with anti-theft coding, which operates in conjunction with the instrument cluster.

After disconnecting the radio power supply, the Radio - R- is ready for use again once the power supply is connected. The anti-theft code does not need to be entered again. The requirement is that the anti-theft coding must be activated for the first time and that the Radio - R- is reconnected in the same vehicle.

Use the Vehicle Diagnostic Tester to get the anti-theft code. The radio card and the label on the Radio - R- that were used in the past are no longer used.

The Vehicle Diagnostic Tester must be connected “online” to determine the anti-theft code. The user must have the proper authorization to access the radio code.

Reactivating a locked Radio - R- is only possible by entering the correct anti-theft code for anti-theft coding.

### Using the Vehicle Diagnostic Tester to get the Anti-Theft Code:

- Connect the Vehicle Diagnostic Tester .
- Select the Guided Fault Finding mode.
- Use the GO TO button to select the “function/component selection” and the following menu options one after the other:
  - ◆ Body
  - ◆ Electrical Equipment
  - ◆ 01-OBD-capable system
  - ◆ Corresponding radio system
  - ◆ Radio system functions
  - ◆ Radio code inquiry

Authorization will be requested from the system: Then the operating data, the VIN and the Radio - R- device number will be automatically read out.



### Note

*The Vehicle Diagnostic Tester may not be able read the Radio - R- device number when a new Radio - R- is installed. In this case, enter the device number manually. The device number can be found on a sticker on the Radio - R- and is also stamped on the side of the device.*

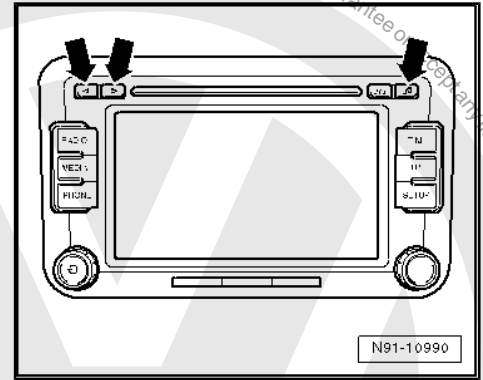
The Vehicle Diagnostic Tester will display the anti-theft code.

The anti-theft code must be entered manually into the Radio - R- .

### Deactivating the Electronic Anti-Theft Protection:

- Switch on the Radio - R- .

An input screen appears.





- Enter the correct anti-theft code using the keyboard on the input screen.
- Press the input button to confirm in the entry.

The Radio - R- is enabled and is ready to be used.

Use the correction button to erase an incorrect code.

If an incorrect anti-theft code is entered, the code can be corrected immediately in another attempt. If anti-theft code is entered incorrectly twice, then the Radio - R- will lock up for one hour. Leave the Radio - R- and ignition on. The procedure for deactivating the anti-theft coding can be repeated after one hour.

Note: the anti-theft code can be entered only two times. After that, the Radio - R- locks up for one hour.

## 4.1.8 Overview - Radio, RCD 320G

### Radio RCD 320G

Familiarity with the function and operation is needed if there are customer concerns. Refer to the Owner's Manual.

The RCD 320G radio system offers the following features:

- ◆ Monochrome display
- ◆ CD player
- ◆ Bluetooth
- ◆ 4 speaker channels, each with 20 W
- ◆ USB connection on the front of the unit
- ◆ SD memory card reader on the front of the unit
- ◆ External Audio Source Connection - R199- on the front of the unit
- ◆ Optional support for the multifunction steering wheel
- ◆ Convenience coding

It is not possible to play the following CD formats:

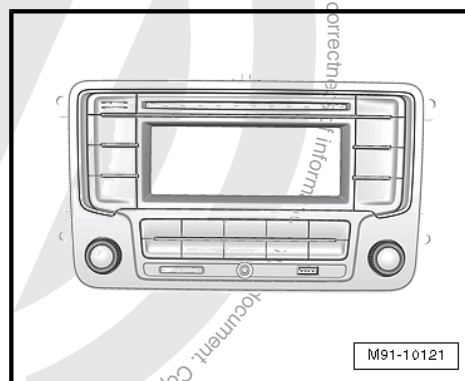
- ◆ 8 cm CDs
- ◆ "Mix CDs" (CDs containing files and audio files)

The RCD 320G is OBD-capable.

For troubleshooting, use the Vehicle Diagnostic Tester in the "Guided Fault Finding" function.

### Repairing Antenna Wires

Antenna wires, repairing. Refer to ⇒ Electrical Equipment; Rep. Gr. 97 ; Antenna Wires, Repairing .



## 4.2 Component Location Overview - Radio



### 1 - Multifunction Steering Wheel

- ❑ Refer to  
⇒ ["8 Multifunction Steering Wheel", page 107](#) .

### 2 - Radio - R-

- ❑ Connector Assignments. Refer to  
⇒ ["4.5 Connector Assignments", page 46](#) .
- ❑ Removing and Installing. Refer to  
⇒ ["4.4 Radio, Removing and Installing", page 44](#) .

### 3 - Multimedia System Control Module - J650-

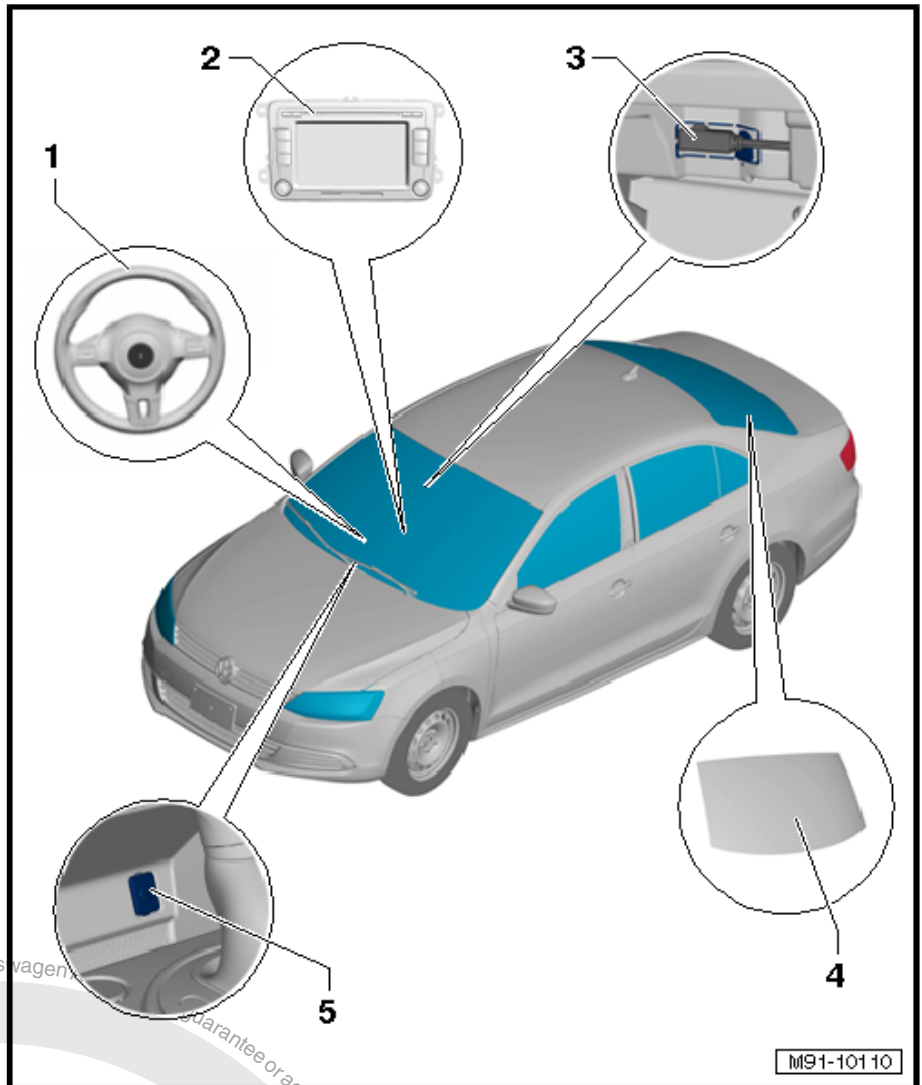
- ❑ Refer to  
⇒ ["9 Connection for External Multimedia Devices", page 111](#) .

### 4 - Rear Window Antennas

- ❑ Antenna systems. Refer to  
⇒ ["3 Antenna Systems", page 18](#) .

### 5 - External Audio Source Connection - R199-

- ❑ Refer to  
⇒ ["9 Connection for External Multimedia Devices", page 111](#) .



M191-10110



## 4.3 Overview - Radio

### 1 - Bolt

- 1.5 Nm

### 2 - Glove Compartment

### 3 - Multimedia System Control Module - J650-

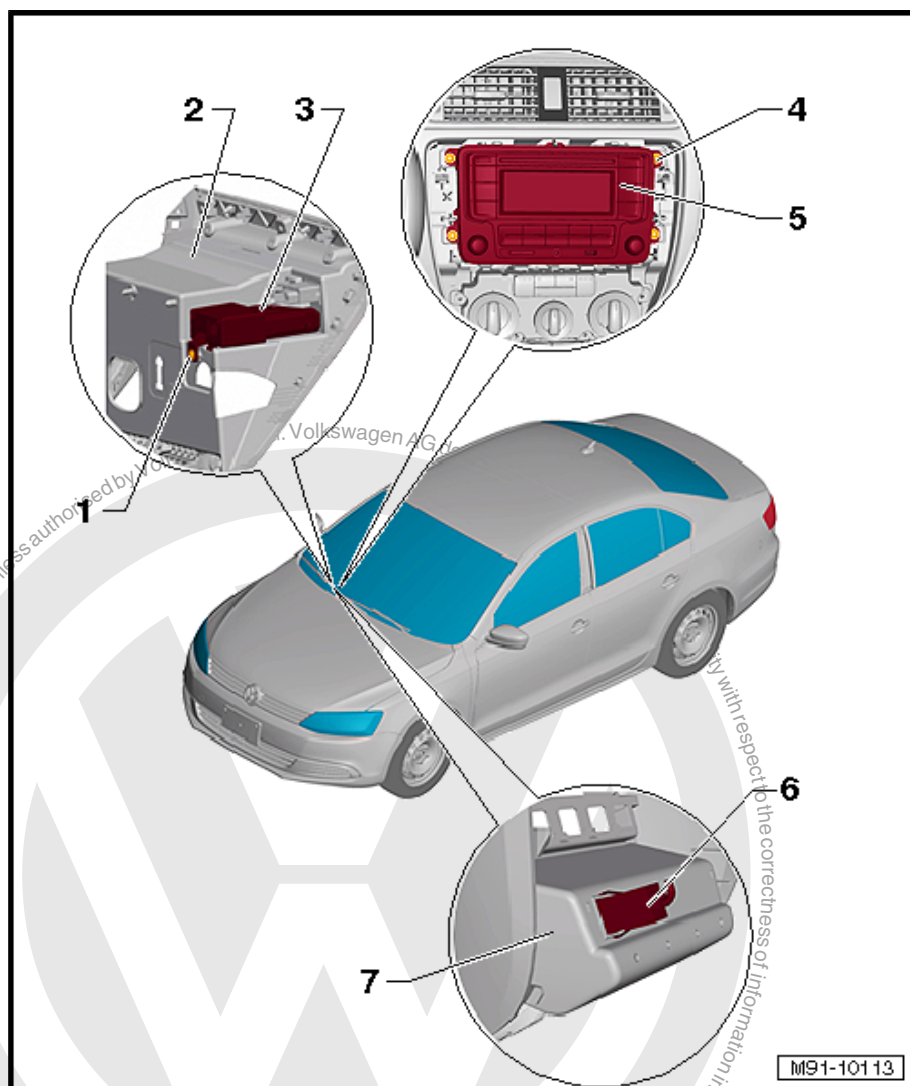
### 4 - Bolt

- 1.5 Nm
- Quantity: 4

### 5 - Radio - R-

### 6 - External Audio Source Connection - R199-

### 7 - Front Center Console



## 4.4 Radio, Removing and Installing

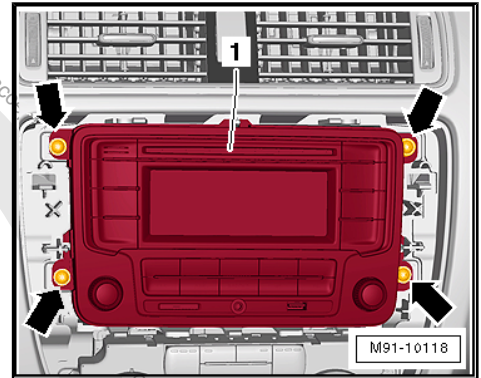
### Removing

- If there are any CD/SD cards still in the player, remove them. Refer to the Owner's Manual.
- Remove any devices connected to the front of the unit.
- Turn off the ignition and all electrical equipment and remove the ignition key.
- Remove the instrument panel center trim. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel .



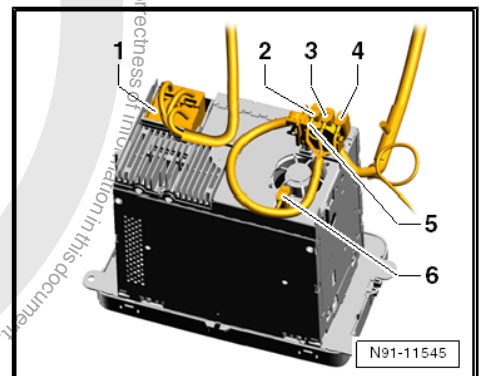


- Remove the screws -arrows- on the Radio - R- -1-.
- Pull the Radio - R- -1- far enough out of the installation slot so that the connectors on the back side are accessible.

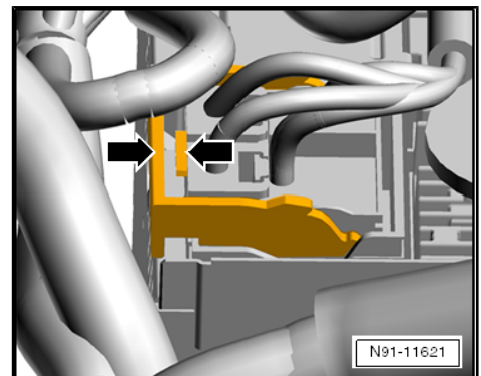


#### Connectors -1- through -6-:

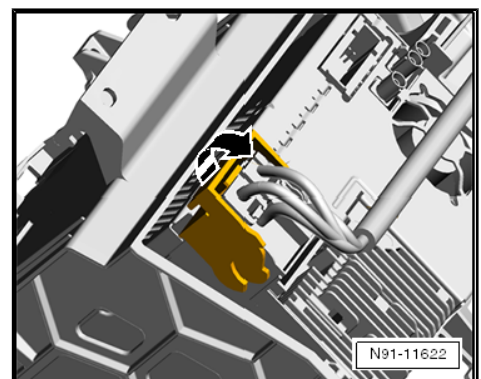
- 1 - Multi-Pin Connector, Quad Block
- 2 - Not Assigned
- 3 - Radio Antenna Connector
- 4 - Radio Antenna Connector
- 5 - Video Signals Connector
- 6 - DAB (Digital Audio Broadcasting)/Satellite Tuner Antenna Connector



- Squeeze the safety mechanism on the connector -arrows-.

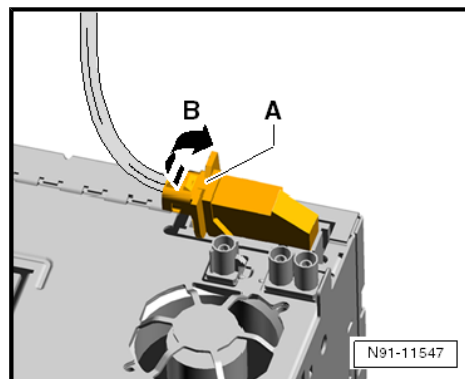


- Move the locking bracket in direction of the -arrow-. The connector will be pushed out at the same time.





- Push the retainer -A- onto the audio/video connector and move the bracket in direction -B-. The connector will be pushed out at the same time.



- Release the safety mechanisms on all the connectors -arrows- and disconnect the connectors.

### Installing

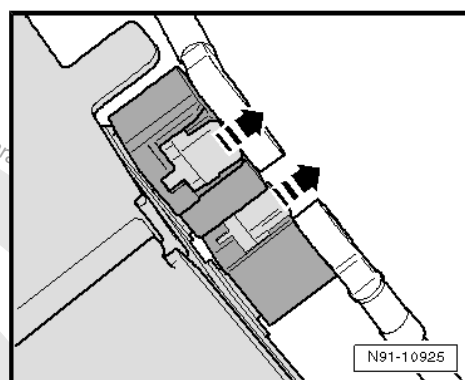
Install in reverse order of removal. Note the following:

Never push directly on the display or the buttons when inserting the Radio - R- , since the Radio - R- may be damaged by doing this.

- Check the coding and code again using the Vehicle Diagnostic Tester .

### Tightening Specifications

- ◆ Refer to ➤ [4.3 Overview - Radio](#), page 44



## 4.5 Connector Assignments

⇒ [4.5.1 Connector Assignments, RCD 210](#), page 46

⇒ [4.5.2 Connector Assignments, RCD 030+](#), page 48

⇒ [4.5.3 Connector Assignments, RCD 310](#), page 50

⇒ [4.5.4 Connector Assignments, RCD 300+](#), page 52

⇒ [4.5.5 Connector Assignments, Premium 8](#), page 55

⇒ [4.5.6 Connector Assignments, RCD 510](#), page 57

⇒ [4.5.7 Connector Assignments, RCD 510+](#), page 60

⇒ [4.5.8 Connector Assignments, RCD 320G](#), page 63

### 4.5.1 Connector Assignments, RCD 210



## 1 - Antenna Connection

- ☐ AM/FM
- ☐ Antenna systems. Refer to  
⇒ ["3 Antenna Systems",  
page 18](#) .

## 2 - 8-Pin Multi-Pin Connector 1, Speaker Outputs

- ☐ Terminal assignment.  
Refer to ⇒ [page 47](#) .

## 3 - 8-Pin Multi-Pin Connector 2, CAN Bus, Voltage Supply

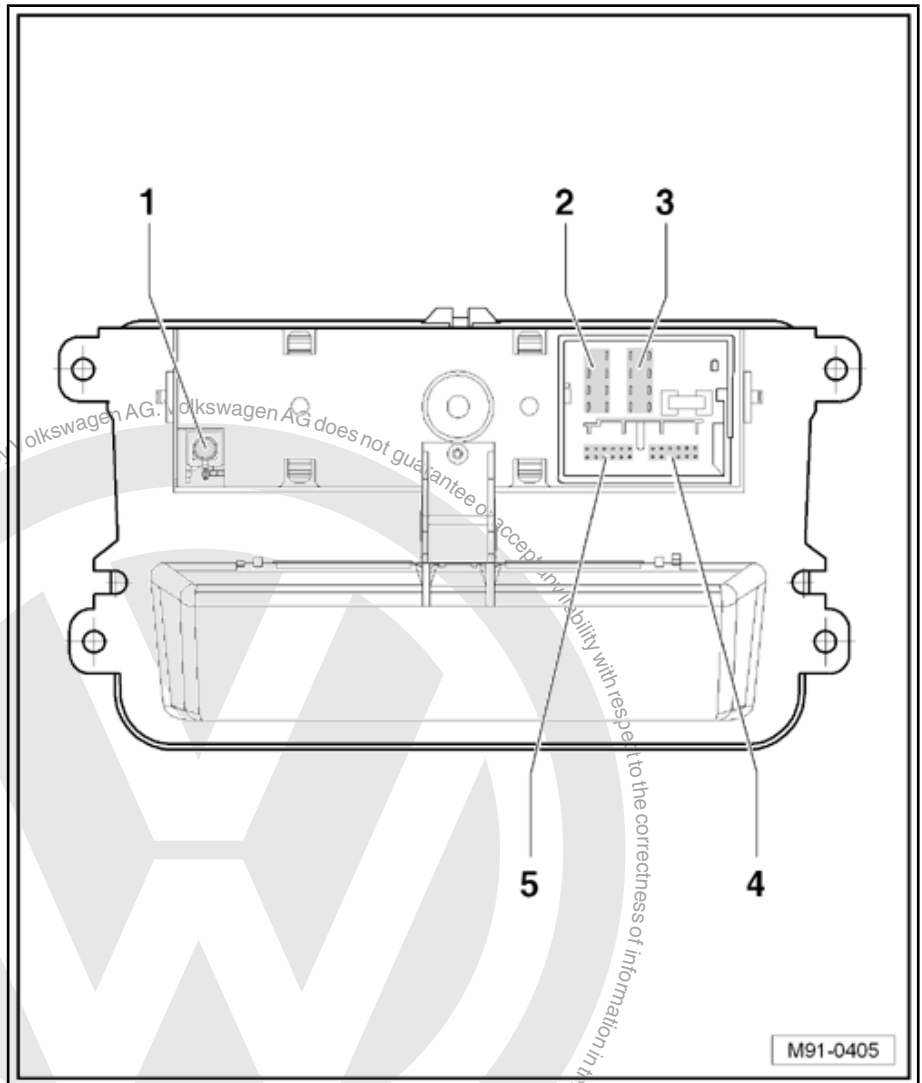
- ☐ Terminal assignment.  
Refer to ⇒ [page 48](#) .

## 4 - 12-Pin Multi-Pin Connector 3, Telephone

- ☐ Terminal assignment.  
Refer to ⇒ [page 48](#) .

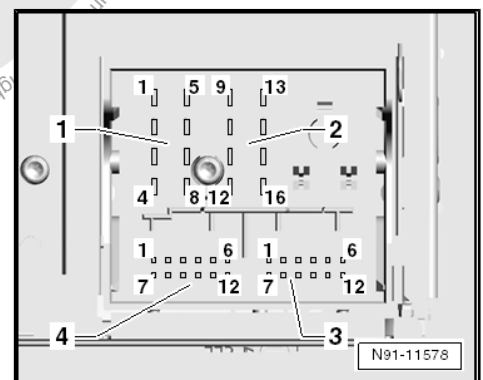
## 5 - Multi-pin connector 4, 12-pin, External Audio Source Connection -R199-

- ☐ Terminal assignment.  
Refer to ⇒ [page 48](#) .



## 8-Pin Multi-Pin Connector 1, Speaker Outputs

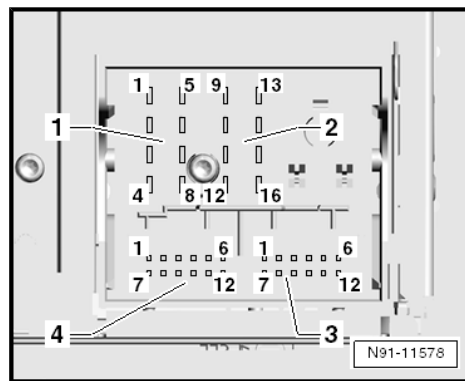
- 1 - Right Rear Speaker (+)
- 2 - Right Front Speaker (-)
- 3 - Left Front Speaker (+)
- 4 - Left Rear Speaker (+)
- 5 - Right Rear Speaker (-)
- 6 - Right Front Speaker (-)
- 7 - Left Front Speaker (+)
- 8 - Left Rear Speaker (-)





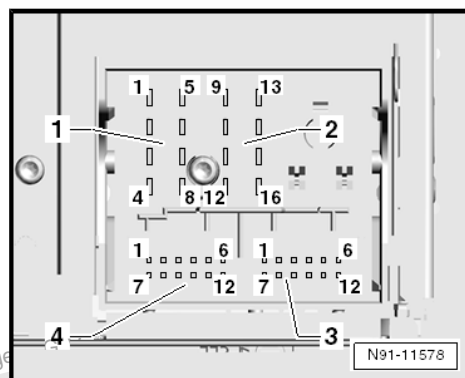
### 8-Pin Multi-Pin Connector 2, CAN Bus, Power Supply

- 9 - CAN Bus High
- 10 - CAN Bus Low
- 12 - Terminal 31
- 15 - Terminal 30
- 16 - Continuous Positive, Connected with PIN 15, Anti-Theft Alarm System



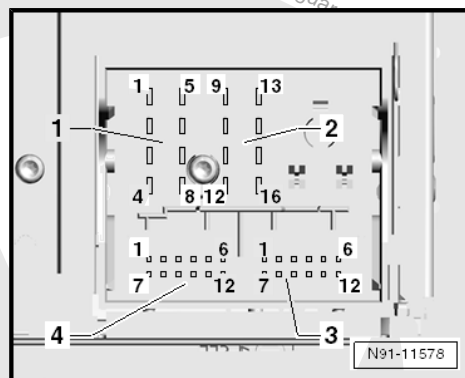
### 12-Pin Multi-Pin Connector 3, Telephone

- 6 - Telephone, LF Signal Input (-)
- 10 - Telephone, Mute
- 12 - Telephone, LF Signal Input (+)



### Multi-Pin Connector 4, 12-Pin, External Audio Source Connection - R199-

- 1 - Left Audio Input External Audio Source Connection - R199-
- 2 - Audio input ground External Audio Source Connection - R199-
- 3 - Audio Ground, CD
- 4 - Terminal 30, CD
- 5 - Not Assigned
- 6 - CD Data out
- 7 - Right Audio Input External Audio Source Connection - R199-
- 8 - Audio Left, CD
- 9 - Audio Right, CD
- 10 - Control Signal, CD
- 11 - CD Data in
- 12 - CD CLK



## 4.5.2 Connector Assignments, RCD 030+



# 1 - 8-Pin Multi-Pin Connector 2, Speaker Outputs

- ☐ Terminal assignment.  
Refer to ⇒ [page 50](#) .

## 2 - 20-Pin Multi-Pin Connector 1, Telephone, Audio Inputs

- ☐ Terminal assignment.  
Refer to ⇒ [page 49](#) .

### 3 - 8-Pin Multi-Pin Connector 3, Power Supply

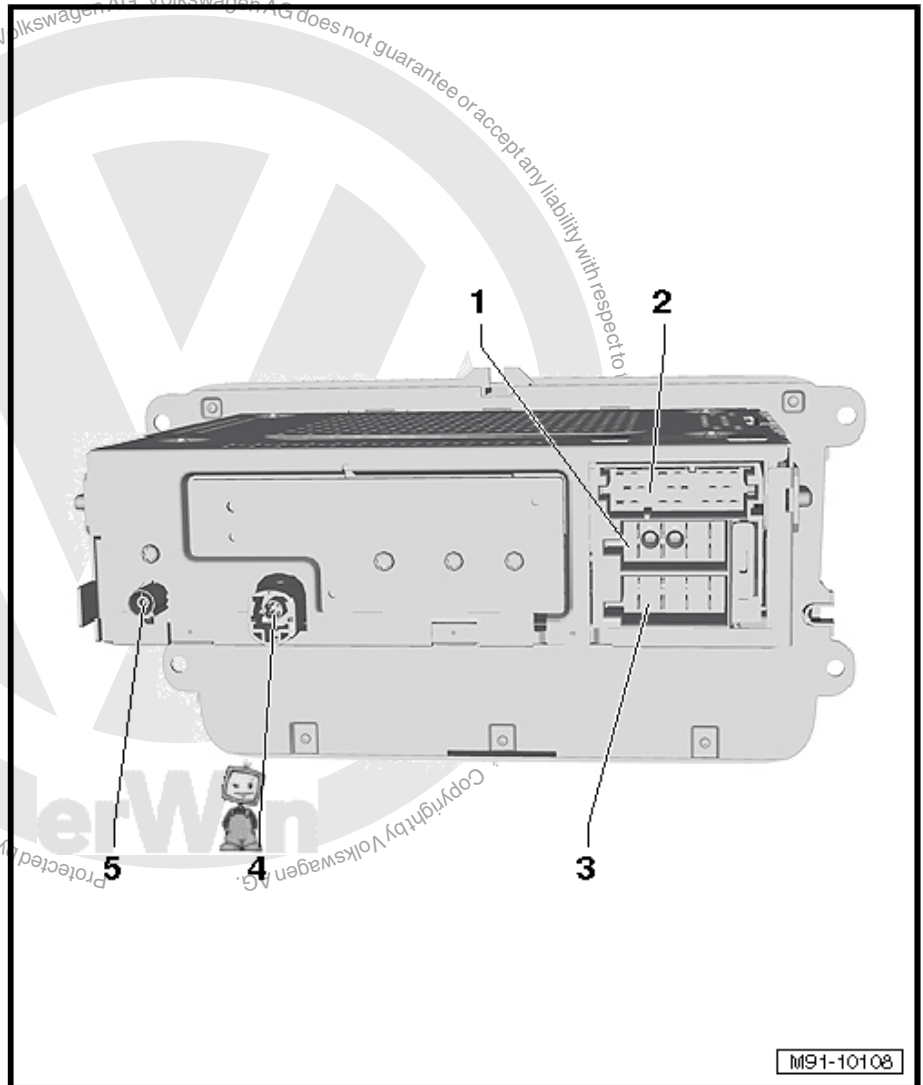
- ☐ Terminal assignment.  
Refer to ⇒ [page 50](#) .

#### 4 - USB Connection

- ☐ Terminal assignment.  
Refer to ⇒ [page 50](#) .

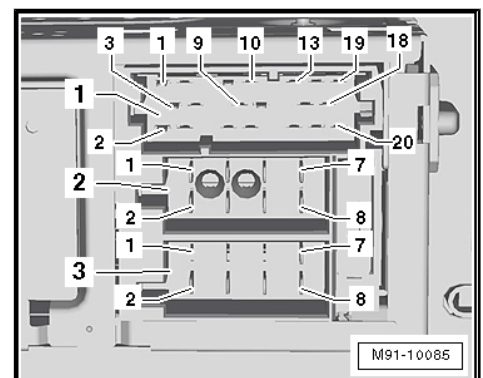
#### 5 - Antenna Connection

- ☐ AM/FM
- ☐ Antenna systems. Refer to  
⇒ ["3 Antenna Systems",  
page 18](#)



## 20-Pin Multi-Pin Connector 1, Telephone, Audio Inputs

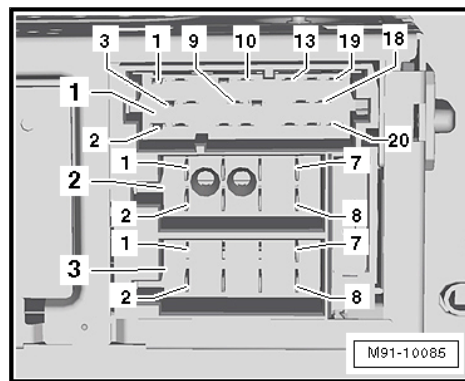
- 1 - Right Audio Input
- 2 - Left Audio Input
- 3 - Audio Input Ground
- 4 - Not Assigned
- 5 - Not Assigned
- 6 - Not Assigned
- 7 - Telephone, LF Signal Input (+)
- 8 - Not Assigned
- 9 - Not Assigned
- 10 - Not Assigned
- 11 - Not Assigned
- 12 - Telephone, LF Signal Input (-)
- 13 bis 20 - Not Assigned





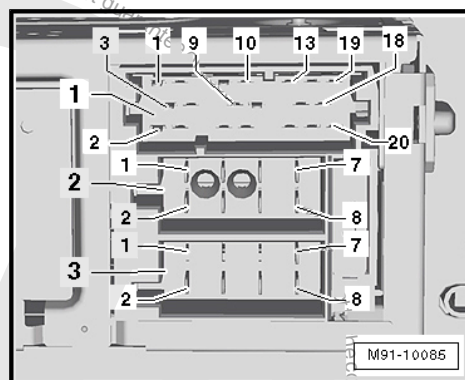
#### 8-Pin Multi-Pin Connector 2, Speaker Outputs

- 1 - Right Rear Speaker (+)
- 2 - Right Rear Speaker (-)
- 3 - Right Front Speaker (-)
- 4 - Right Front Speaker (-)
- 5 - Left Front Speaker (+)
- 6 - Left Front Speaker (+)
- 7 - Left Rear Speaker (+)
- 8 - Left Rear Speaker (-)



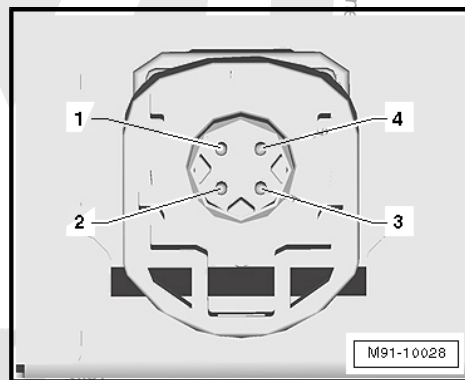
#### 8-Pin Multi-Pin Connector 3, Power Supply

- 1 - Not Assigned
- 2 - Telephone, Mute
- 3 - Not Assigned
- 4 - Radio - R- Switch-On Signal
- 5 - Not Assigned
- 6 - Terminal 58
- 7 - Terminal 30
- 8 - Terminal 31



#### 4-Pin USB Connection

- 1 - Ground
- 2 - D (-)
- 3 - VCC (+5 V)
- 4 - D (+)



### 4.5.3 Connector Assignments, RCD 310



## 1 - Antenna Connection

- ☐ DAB
- ☐ Antenna systems. Refer to  
⇒ ["3 Antenna Systems", page 18](#).

## 2 - 8-Pin Multi-Pin Connector 1, Speaker Outputs

- ☐ Terminal assignment. Refer to ⇒ [page 51](#).

## 3 - 8-Pin Multi-Pin Connector 2, CAN Bus, Voltage Supply

- ☐ Terminal assignment. Refer to ⇒ [page 52](#).

## 4 - 12-Pin Multi-Pin Connector 3, Telephone

- ☐ Terminal assignment. Refer to ⇒ [page 52](#).

## 5 - Multi-Pin Connector 4, 12-Pin, External Audio Source Connection - R199- , Multimedia System Control Module - J650-

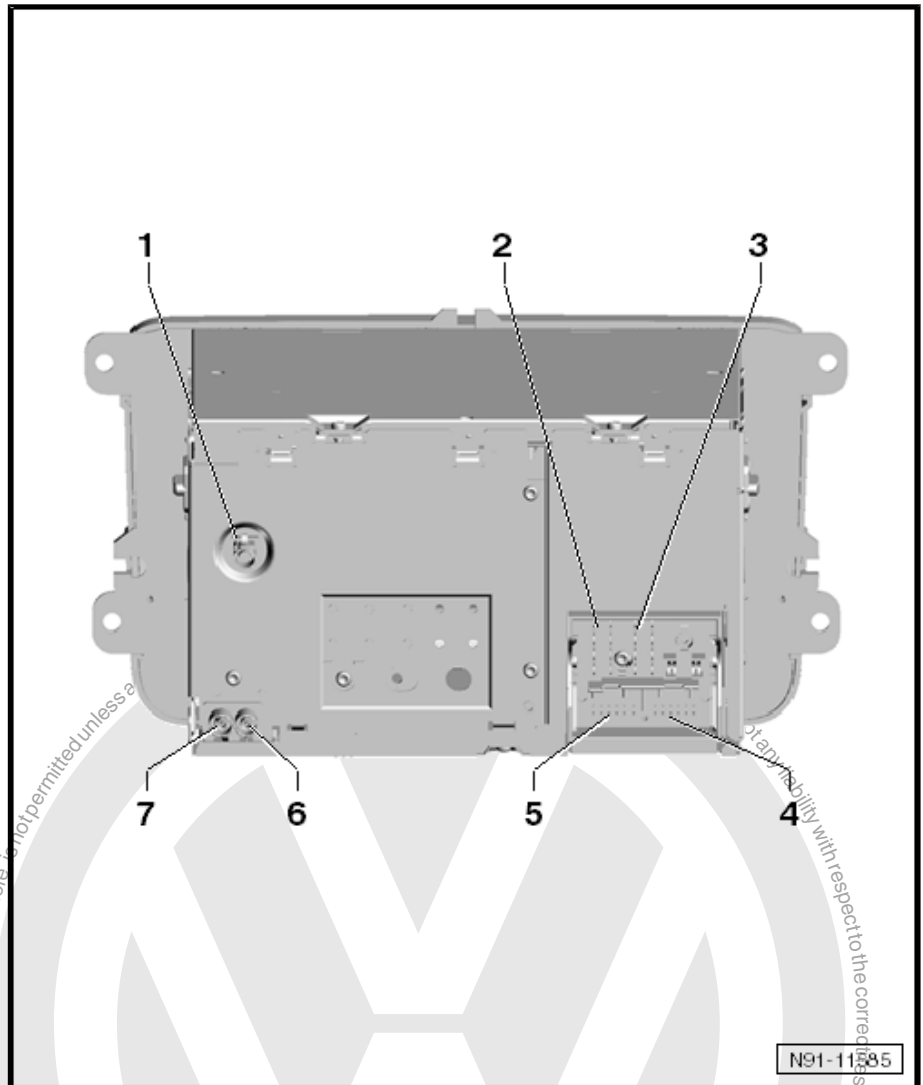
- ☐ Terminal assignment. Refer to ⇒ [page 52](#).

## 6 - Antenna Connection

- ☐ FM2
- ☐ Antenna systems. Refer to  
⇒ ["3 Antenna Systems", page 18](#).

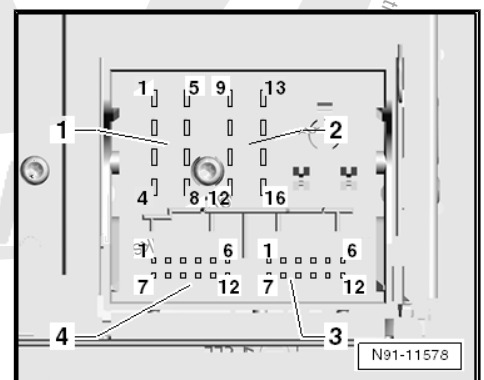
## 7 - Antenna Connection

- ☐ AM/FM
- ☐ Antenna systems. Refer to ⇒ ["3 Antenna Systems", page 18](#).



## 8-Pin Multi-Pin Connector 1, Speaker Outputs

- 1 - Right Rear Speaker (+)
- 2 - Right Front Speaker (-)
- 3 - Left Front Speaker (+)
- 4 - Left Rear Speaker (+)
- 5 - Right Rear Speaker (-)
- 6 - Right Front Speaker (-)
- 7 - Left Front Speaker (+)
- 8 - Left Rear Speaker (-)

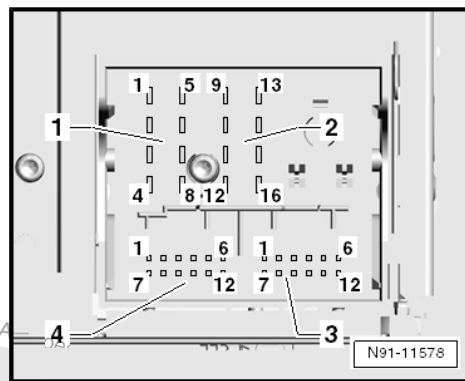






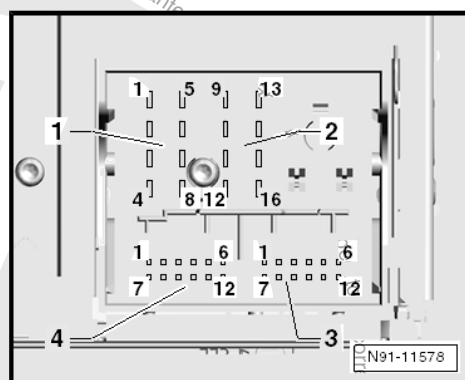
#### 8-Pin Multi-Pin Connector 2, CAN Bus, Power Supply

- 9 - CAN Bus High
- 10 - CAN Bus Low
- 12 - Terminal 31
- 15 - Terminal 30
- 16 - Continuous Positive, Connected with PIN 15, Anti-Theft Alarm System



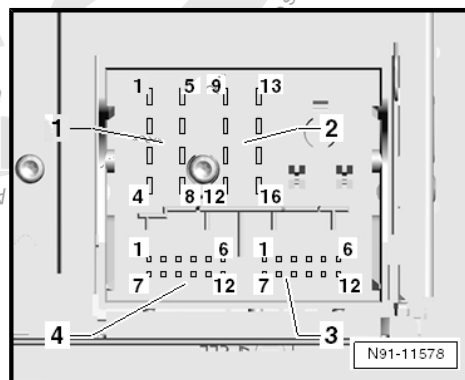
#### 12-Pin Multi-Pin Connector 3, Telephone

- 1 - Microphone Input (-)
- 2 - Not Assigned
- 3 - Not Assigned
- 4 - Microphone Output (-)
- 5 - Telephone, Low Frequency Signal Input Left (-)
- 6 - Telephone, Low Frequency Signal Input Right (-)
- 7 - Microphone Input (+)
- 8 - Not Assigned
- 9 - Microphone Output (+)
- 10 - Telephone, Mute
- 11 - Telephone, Low Frequency Signal Input Left (+)
- 12 - Telephone, Low Frequency Signal Input Right (+)



#### 12-Pin Multi-Pin Connector 4, External Audio Source Connection - R199- , Multimedia System Control Module - J650-

- 1 - Left Audio Input External Audio Source Connection - R199- / Multimedia System Control Module - J650-
- 2 - Audio Input Ground External Audio Source Connection - R199- / Multimedia System Control Module - J650-
- 3 - Audio Ground, CD
- 4 - Terminal 30, CD
- 5 - Not Assigned
- 6 - CD Data out
- 7 - Right Audio Input External Audio Source Connection - R199- / Multimedia System Control Module - J650-
- 8 - Audio Left, CD
- 9 - Audio Right, CD
- 10 - Control Signal, CD
- 11 - CD Data in
- 12 - CD CLK



### 4.5.4 Connector Assignments, RCD 300+





**1 - 8-Pin Multi-Pin Connector  
1, Speaker Outputs**

- ☐ Terminal assignment.  
Refer to ➤ [page 53](#) .

**2 - 8-Pin Multi-Pin Connector  
2, CAN Bus, Voltage Supply**

- ☐ Terminal assignment.  
Refer to ➤ [page 54](#) .

**3 - 12-Pin Multi-Pin Connector  
3, Telephone**

- ☐ Terminal assignment.  
Refer to ➤ [page 54](#) .

**4 - 12-Pin Multi-Pin Connector  
4, Audio Inputs**

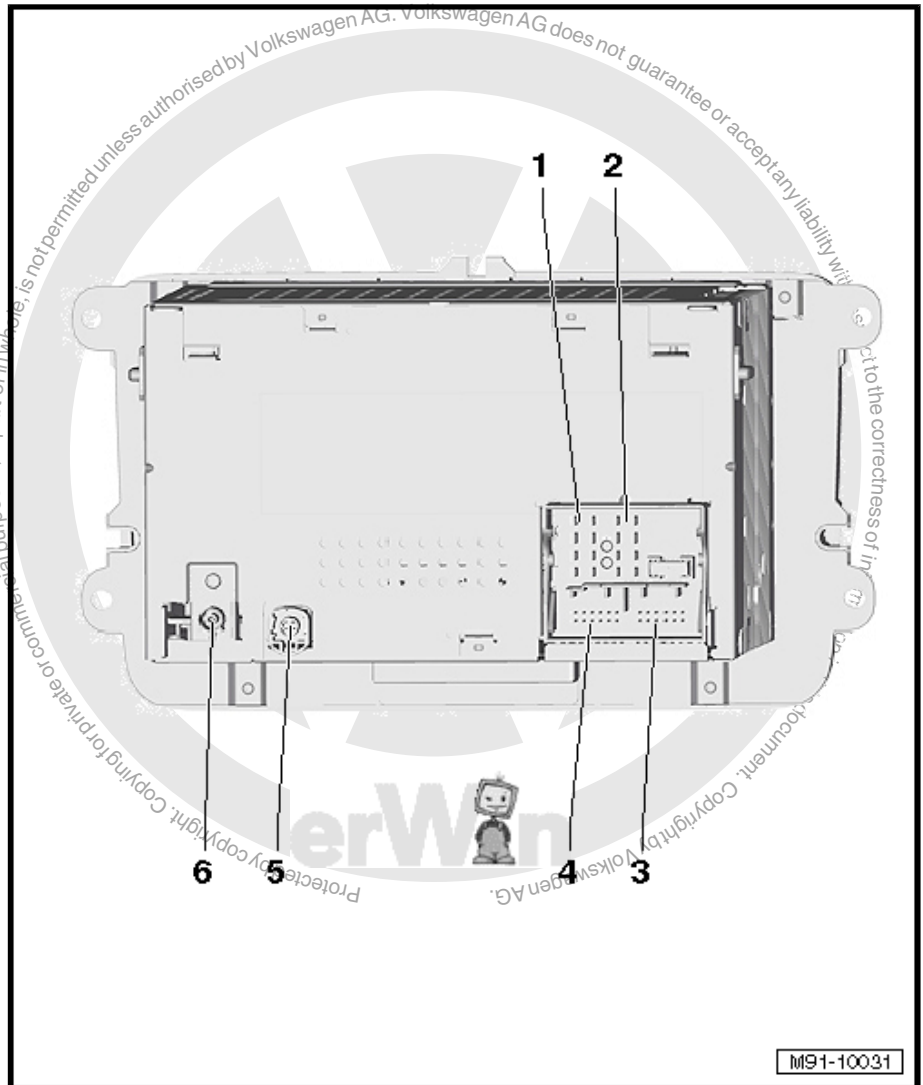
- ☐ Terminal assignment.  
Refer to ➤ [page 54](#) .

**5 - USB Connection**

- ☐ Terminal assignment.  
Refer to ➤ [page 55](#) .

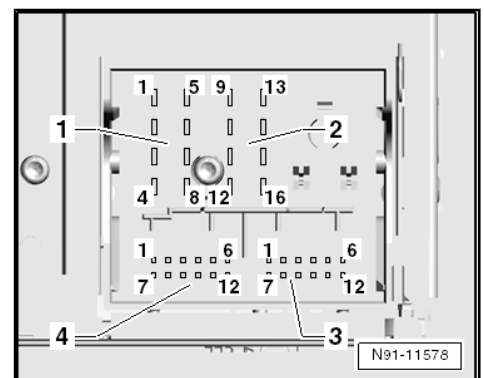
**6 - Antenna Connection**

- ☐ AM/FM
- ☐ Antenna systems. Refer to  
➤ ["3 Antenna Systems",  
page 18](#) .



**8-Pin Multi-Pin Connector 1, Speaker Outputs**

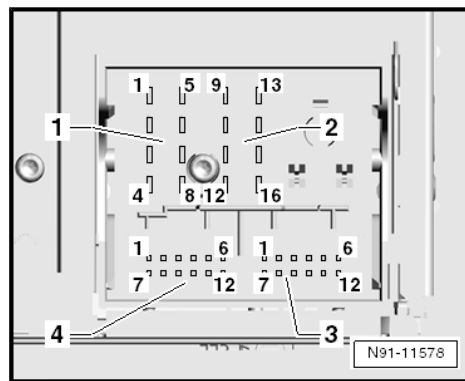
- 1 - Right Rear Speaker (+)
- 2 - Right Front Speaker (-)
- 3 - Left Front Speaker (+)
- 4 - Left Rear Speaker (+)
- 5 - Right Rear Speaker (-)
- 6 - Right Front Speaker (-)
- 7 - Left Front Speaker (+)
- 8 - Left Rear Speaker (-)





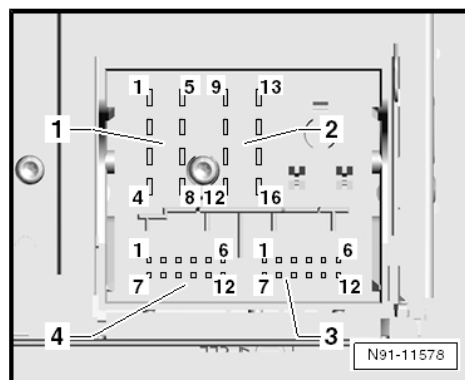
### 8-Pin Multi-Pin Connector 2, CAN Bus, Power Supply

- 9 - CAN Bus High
- 10 - CAN Bus Low
- 12 - Terminal 31
- 15 - Terminal 30
- 16 - Continuous Positive, Connected with PIN 15, Anti-Theft Alarm System



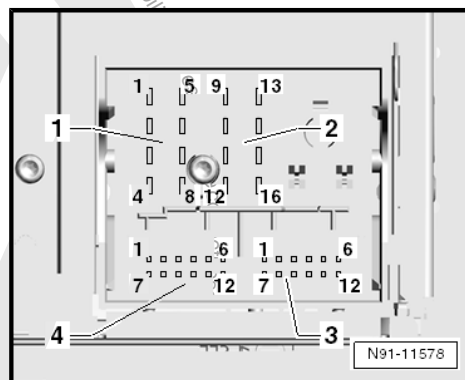
### 12-Pin Multi-Pin Connector 3, Telephone

- 1 - Not Assigned
- 2 - Not Assigned
- 3 - Not Assigned
- 4 - Not Assigned
- 5 - Telephone, Low Frequency Signal Input Left (-)
- 6 - Telephone, Low Frequency Signal Input Right (-)
- 7 - Not Assigned
- 8 - Not Assigned
- 9 - Not Assigned
- 10 - Telephone, Mute
- 11 - Telephone, Low Frequency Signal Input Left (+)
- 12 - Telephone, Low Frequency Signal Input Right (+)



### 12-Pin Multi-Pin Connector 4, Audio Inputs

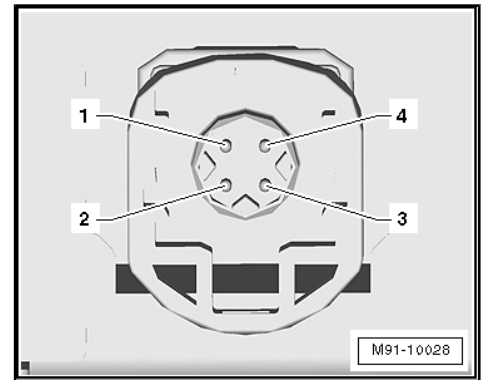
- 1 - Left Audio Input
- 2 - Audio Input Ground
- 3 - Audio Ground, CD
- 4 - Terminal 30, CD
- 5 - Not Assigned
- 6 - Not Assigned
- 7 - Right Audio Input
- 8 - Audio Left, CD
- 9 - Audio Right, CD
- 10 - Not Assigned
- 11 - Not Assigned
- 12 - Not Assigned





#### 4-Pin USB Connection

- 1 - Ground
- 2 - D (-)
- 3 - VCC (+5 V)
- 4 - D (+)



### 4.5.5 Connector Assignments, Premium 8

#### 1 - Antenna Connection

- ☐ SAT
- ☐ Antenna systems. Refer to  
⇒ ["3 Antenna Systems", page 18](#).

#### 2 - 8-Pin Multi-Pin Connector 1, Speaker Outputs

- ☐ Terminal assignment.  
Refer to ⇒ [page 56](#).

#### 3 - 8-Pin Multi-Pin Connector 2, CAN Bus, Voltage Supply

- ☐ Terminal assignment.  
Refer to ⇒ [page 56](#).

#### 4 - 12-Pin Multi-Pin Connector 3, Telephone

- ☐ Terminal assignment.  
Refer to ⇒ [page 56](#).

#### 5 - 12-Pin Multi-Pin Connector 4, External Audio Source Connection - R199- / Multimedia System Control Module - J650-

- ☐ Terminal assignment.  
Refer to ⇒ [page 57](#).

#### 6 - 26-Pin Multi-Pin Connector 5, Video and LF Input

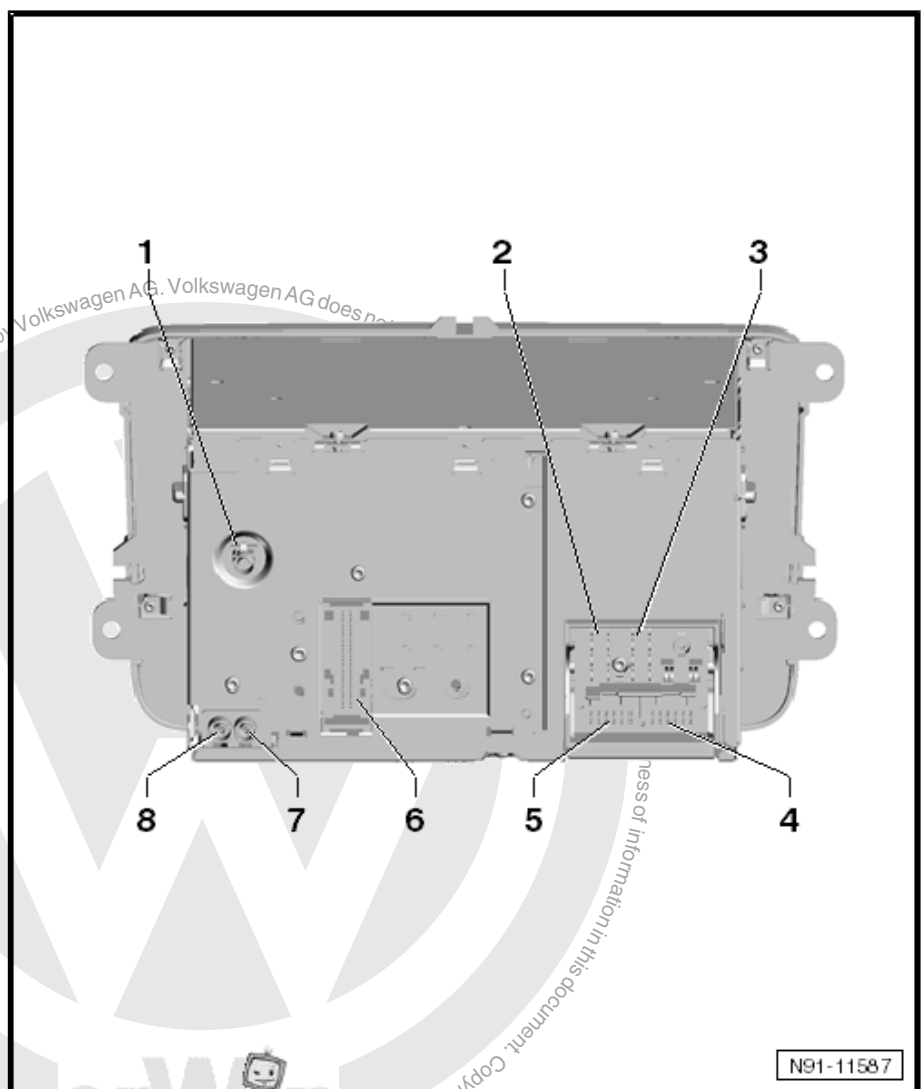
- ☐ Terminal assignment.  
Refer to ⇒ [page 57](#).

#### 7 - Antenna Connection

- ☐ FM2
- ☐ Antenna systems. Refer to  
⇒ ["3 Antenna Systems", page 18](#).

#### 8 - Antenna Connection

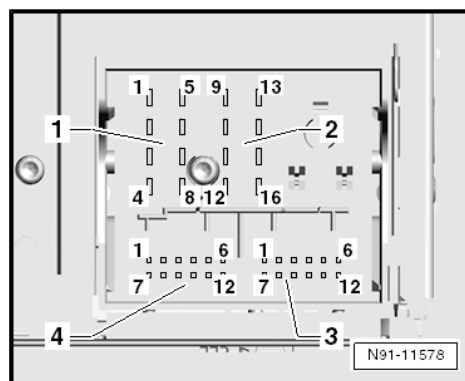
- ☐ AM/FM
- ☐ Antenna systems. Refer to ⇒ ["3 Antenna Systems", page 18](#).





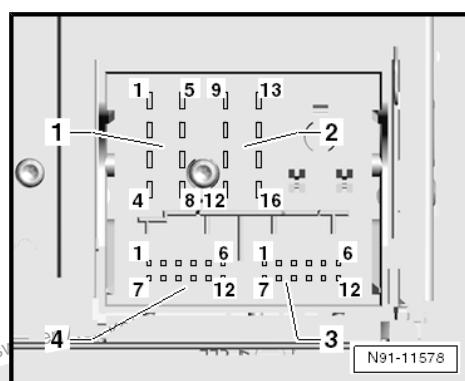
### 8-Pin Multi-Pin Connector 1, Speaker Outputs

- 1 - Right Rear Speaker (+)
- 2 - Right Front Speaker (-)
- 3 - Left Front Speaker (+)
- 4 - Left Rear Speaker (+)
- 5 - Right Rear Speaker (-)
- 6 - Right Front Speaker (-)
- 7 - Left Front Speaker (+)
- 8 - Left Rear Speaker (-)



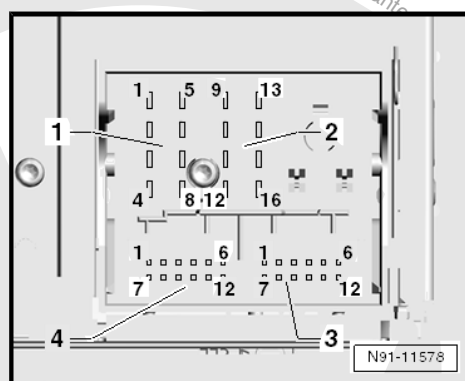
### 8-Pin Multi-Pin Connector 2, CAN Bus, Power Supply

- 9 - CAN Bus High
- 10 - CAN Bus Low
- 12 - Terminal 31
- 15 - Terminal 30
- 16 - Continuous Positive, Connected with PIN 15, Anti-Theft Alarm System



### 12-Pin Multi-Pin Connector 3, Telephone

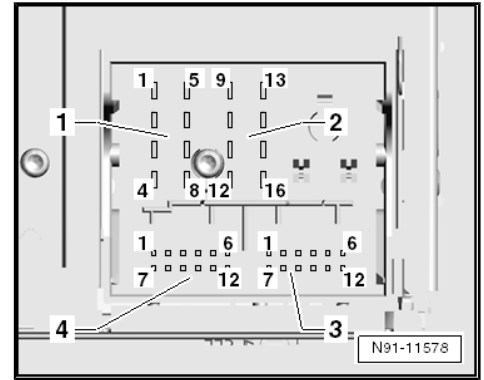
- 1 - Microphone Input (-)
- 2 - Right Audio Output
- 3 - Audio Output Ground
- 4 - Microphone Output (-)
- 5 - Telephone, Low Frequency Signal Input Left (-)
- 6 - Telephone, Low Frequency Signal Input Right (-)
- 7 - Microphone Input (+)
- 8 - Left Audio Output
- 9 - Microphone Output (+)
- 10 - Telephone, Mute
- 11 - Telephone, Low Frequency Signal Input Left (+)
- 12 - Telephone, Low Frequency Signal Input Right (+)





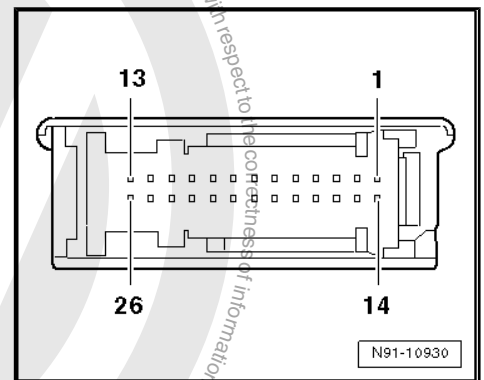
#### 12-Pin Multi-Pin Connector 4, External Audio Source Connection - R199- , Multimedia System Control Module - J650-

- 1 - Left Audio Input External Audio Source Connection - R199- / Multimedia System Control Module - J650-
- 2 - Audio Input Ground External Audio Source Connection - R199- / Multimedia System Control Module - J650-
- 3 - Audio Ground, CD
- 4 - Terminal 30, CD
- 5 - Not Assigned
- 6 - CD Data out
- 7 - Right Audio Input External Audio Source Connection - R199- / Multimedia System Control Module - J650-
- 8 - Audio Left, CD
- 9 - Audio Right, CD
- 10 - Control Signal, CD
- 11 - CD Data in
- 12 - CD CLK



#### 26-Pin Multi-Pin Connector 5, Video- and LF Input

- 4 - Ground Shield
- 5 - Video Output LF Right
- 6 - Video Output Ground
- 7 - Video Output Sync
- 8 - Video Output Green
- 9 - Ground Shield
- 10 - Video Input LF Right
- 11 - Video Input Ground
- 12 - Video Input Sync
- 13 - Video Input Green
- 17 - Video Output LF Ground
- 18 - Video Output LF Left
- 19 - Video Output RGBS (-)
- 20 - Video Output Blue
- 21 - Video Output Red
- 22 - Video Output LF (-)
- 23 - Video Input LF Left
- 24 - Video Input RGBS (-)
- 25 - Video Input Blue
- 26 - Video Input Red



### 4.5.6 Connector Assignments, RCD 510



## 1 - Antenna Connection

- ☐ DAB
- ☐ Antenna systems. Refer to  
⇒ ["3 Antenna Systems", page 18](#).

## 2 - 8-Pin Multi-Pin Connector 1, Speaker Outputs

- ☐ Terminal assignment. Refer to ⇒ [page 58](#).

## 3 - 8-Pin Multi-Pin Connector 2, CAN Bus, Voltage Supply

- ☐ Terminal assignment. Refer to ⇒ [page 59](#).

## 4 - 12-Pin Multi-Pin Connector 3, Telephone

- ☐ Terminal assignment. Refer to ⇒ [page 59](#).

## 5 - Multi-Pin Connector 4, 12-Pin, External Audio Source Connection - R199-, Multimedia System Control Module - J650-

- ☐ Terminal assignment. Refer to ⇒ [page 59](#).

## 6 - 26-Pin Multi-Pin Connector 5, Video and LF Input

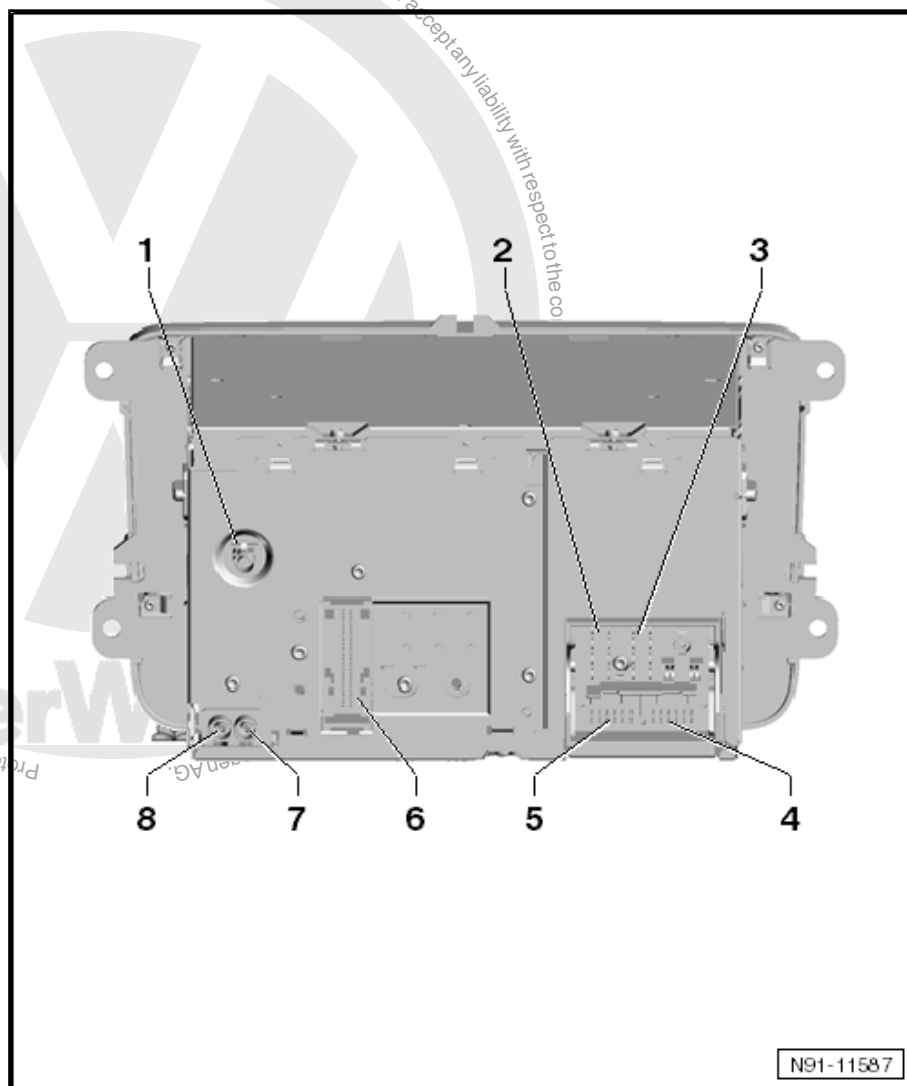
- ☐ Terminal assignment. Refer to ⇒ [page 60](#).

## 7 - Antenna Connection

- ☐ FM2
- ☐ Antenna systems. Refer to  
⇒ ["3 Antenna Systems", page 18](#).

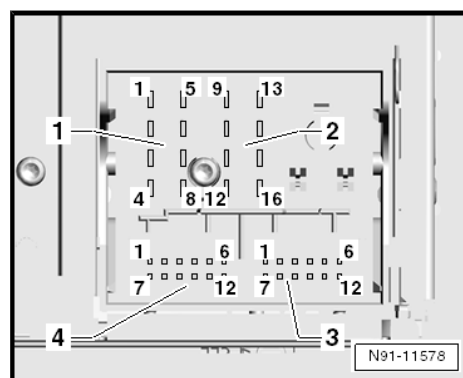
## 8 - Antenna Connection

- ☐ AM/FM
- ☐ Antenna systems. Refer to ⇒ ["3 Antenna Systems", page 18](#).



## 8-Pin Multi-Pin Connector 1, Speaker Outputs

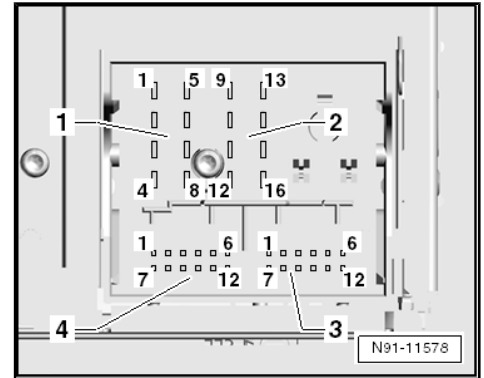
- 1 - Right Rear Speaker (+)
- 2 - Right Front Speaker (-)
- 3 - Left Front Speaker (+)
- 4 - Left Rear Speaker (+)
- 5 - Right Rear Speaker (-)
- 6 - Right Front Speaker (-)
- 7 - Left Front Speaker (+)
- 8 - Left Rear Speaker (-)





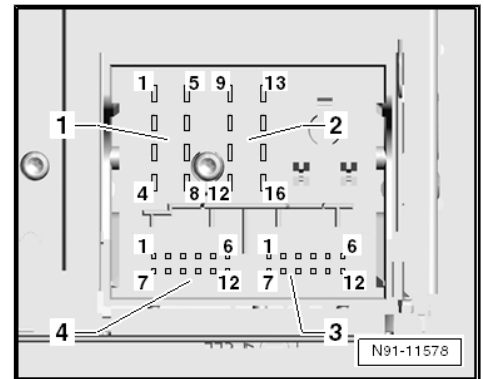
### 8-Pin Multi-Pin Connector 2, CAN Bus, Power Supply

- 9 - CAN Bus High
- 10 - CAN Bus Low
- 12 - Terminal 31
- 15 - Terminal 30
- 16 - Continuous Positive, Connected with PIN 15, Anti-Theft Alarm System



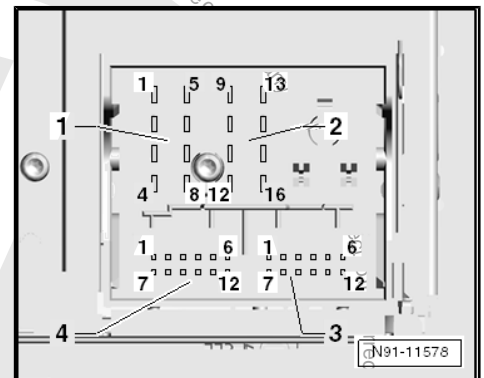
### 12-Pin Multi-Pin Connector 3, Telephone

- 1 - Microphone Input (-)
- 2 - Right Audio Output
- 3 - Audio Output Ground
- 4 - Microphone Output (-)
- 5 - Telephone, Low Frequency Signal Input Left (-)
- 6 - Telephone, Low Frequency Signal Input Right (-)
- 7 - Microphone Input (+)
- 8 - Left Audio Output
- 9 - Microphone Output (+)
- 10 - Telephone, Mute
- 11 - Telephone, Low Frequency Signal Input Left (+)
- 12 - Telephone, Low Frequency Signal Input Right (+)



### 12-Pin Multi-Pin Connector 4, External Audio Source Connection - R199- , Multimedia System Control Module - J650-

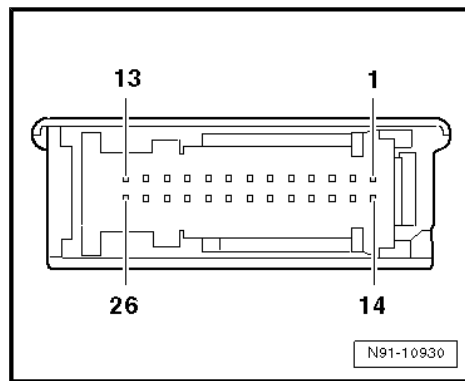
- 1 - Left Audio Input External Audio Source Connection - R199- / Multimedia System Control Module - J650-
- 2 - Audio Input Ground External Audio Source Connection - R199- / Multimedia System Control Module - J650-
- 3 - Audio Ground, CD
- 4 - Terminal 30, CD
- 5 - Not Assigned
- 6 - CD Data out
- 7 - Right Audio Input External Audio Source Connection - R199- / Multimedia System Control Module - J650-
- 8 - Audio Left, CD
- 9 - Audio Right, CD
- 10 - Control Signal, CD
- 11 - CD Data in
- 12 - CD CLK





## 26-Pin Multi-Pin Connector 5, Video- and LF Input

- 4 - Ground Shield
- 5 - Video Output LF Right
- 6 - Video Output Ground
- 7 - Video Output Sync
- 8 - Video Output Green
- 9 - Ground Shield
- 10 - Video Input LF Right
- 11 - Video Input Ground
- 12 - Video Input Sync
- 13 - Video Input Green
- 17 - Video Output LF Ground
- 18 - Video Output LF Left
- 19 - Video Output RGBS (-)
- 20 - Video Output Blue
- 21 - Video Output Red
- 22 - Video Output LF (-)
- 23 - Video Input LF Left
- 24 - Video Input RGBS (-)
- 25 - Video Input Blue
- 26 - Video Input Red



### 4.5.7 Connector Assignments, RCD 510+





**1 - 8-Pin Multi-Pin Connector  
1, Speaker Outputs**

- ☐ Terminal assignment.  
Refer to ⇒ [page 61](#) .

**2 - 8-Pin Multi-Pin Connector  
2, CAN Bus, Voltage Supply**

- ☐ Terminal assignment.  
Refer to ⇒ [page 62](#) .

**3 - 12-Pin Multi-Pin Connector  
3, Telephone**

- ☐ Terminal assignment.  
Refer to ⇒ [page 62](#) .

**4 - Multi-Pin Connector 4, 12-Pin, External Audio Source Connection - R199- , Multimedia System Control Module - J650-**

- ☐ Terminal assignment.  
Refer to ⇒ [page 62](#) .

**5 - USB Connection**

- ☐ Terminal assignment.  
Refer to ⇒ [page 63](#) .

**6 - 26-Pin Multi-Pin Connector  
5, Video and LF Input**

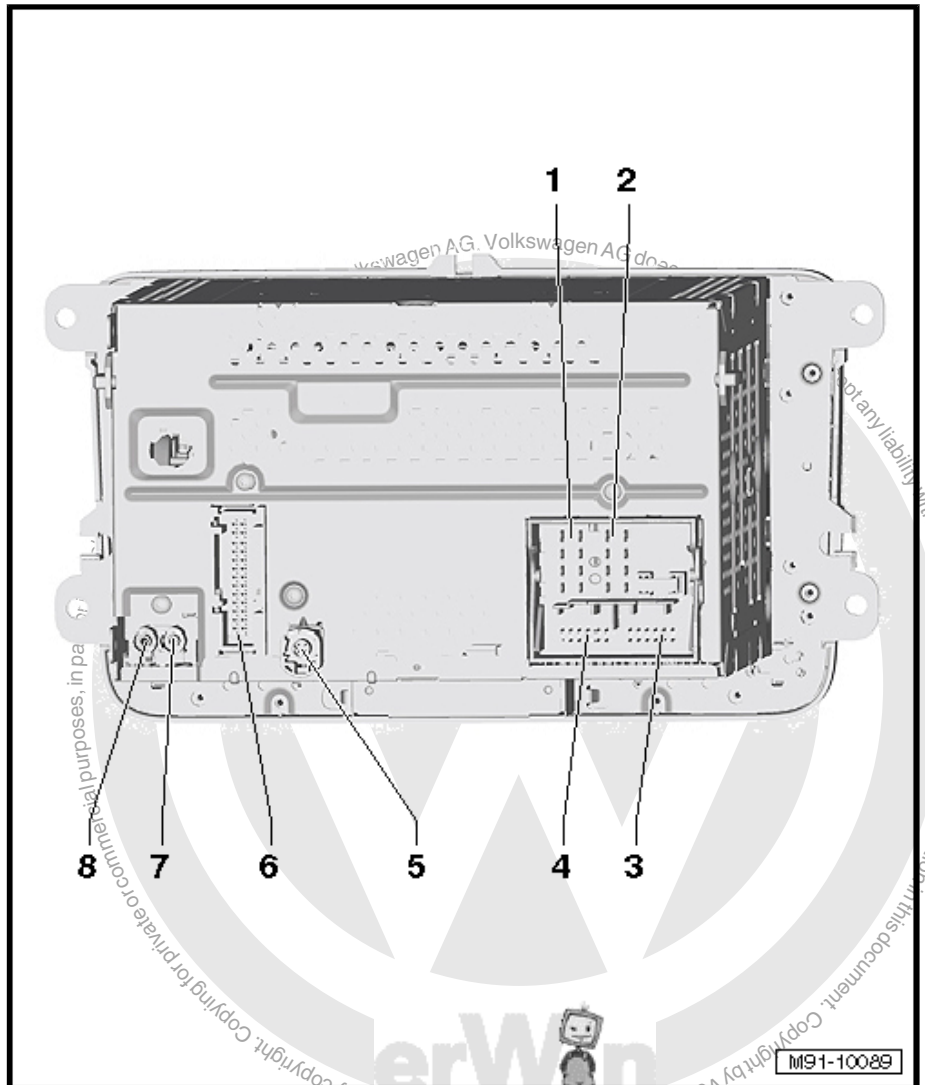
- ☐ Terminal assignment.  
Refer to ⇒ [page 63](#) .

**7 - Antenna Connection**

- ☐ FM2
- ☐ Antenna systems. Refer to  
⇒ ["3 Antenna Systems",  
page 18](#) .

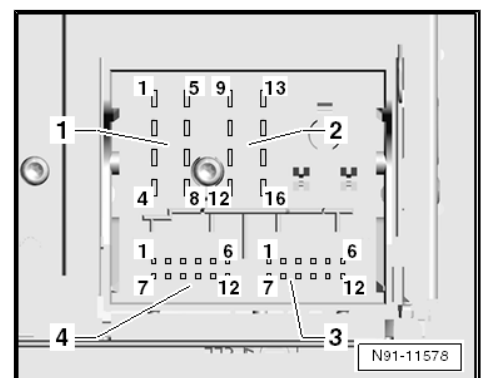
**8 - Antenna Connection**

- ☐ AM/FM
- ☐ Antenna systems. Refer to ⇒ ["3 Antenna Systems", page 18](#) .



**8-Pin Multi-Pin Connector 1, Speaker Outputs**

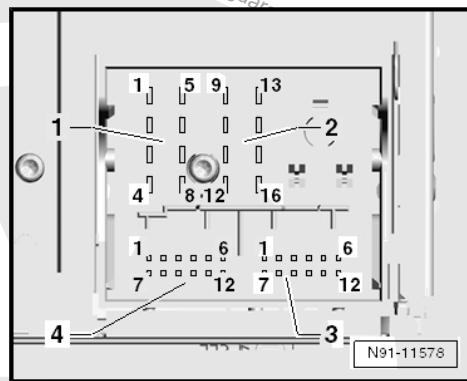
- 1 - Right Rear Speaker (+)
- 2 - Right Front Speaker (-)
- 3 - Left Front Speaker (+)
- 4 - Left Rear Speaker (+)
- 5 - Right Rear Speaker (-)
- 6 - Right Front Speaker (-)
- 7 - Left Front Speaker (+)
- 8 - Left Rear Speaker (-)





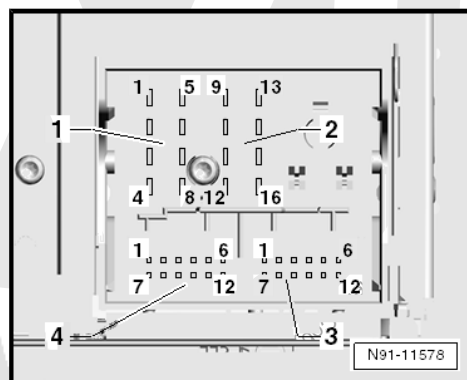
### 8-Pin Multi-Pin Connector 2, CAN Bus, Power Supply

- 9 - CAN Bus High
- 10 - CAN Bus Low
- 12 - Terminal 31
- 15 - Terminal 30
- 16 - Continuous Positive, Connected with PIN 15, Anti-Theft Alarm System



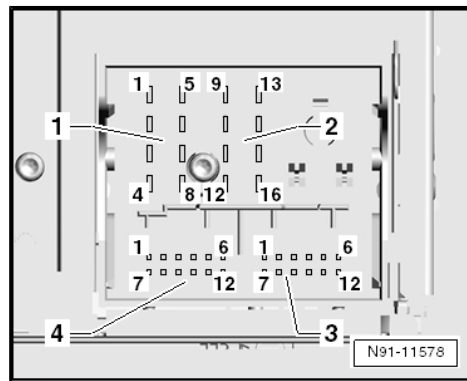
### 12-Pin Multi-Pin Connector 3, Telephone

- 1 - Not Assigned
- 2 - Right Audio Output
- 3 - Audio Output Ground
- 4 - Not Assigned
- 5 - Telephone, Low Frequency Signal Input Left (-)
- 6 - Telephone, Low Frequency Signal Input Right (-)
- 7 - Not Assigned
- 8 - Left Audio Output
- 9 - Not Assigned
- 10 - Telephone, Mute
- 11 - Telephone, Low Frequency Signal Input Left (+)
- 12 - Telephone, Low Frequency Signal Input Right (+)



### 12-Pin Multi-Pin Connector 4, External Audio Source Connection - R199- , Multimedia System Control Module - J650-

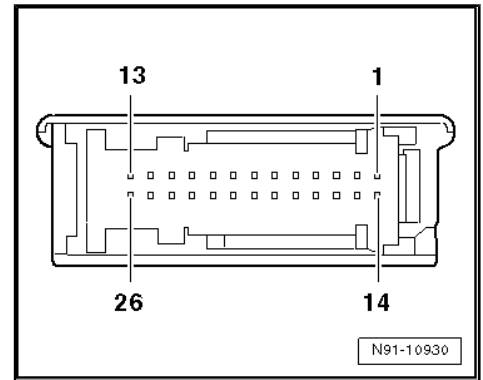
- 1 - Left Audio Input External Audio Source Connection - R199- / Multimedia System Control Module - J650-
- 2 - Audio Input Ground External Audio Source Connection - R199- / Multimedia System Control Module - J650-
- 3 - Audio Ground, CD
- 4 - Terminal 30, CD
- 5 - Not Assigned
- 6 - CD Data out
- 7 - Right Audio Input External Audio Source Connection - R199- / Multimedia System Control Module - J650-
- 8 - Audio Left, CD
- 9 - Audio Right, CD
- 10 - Control Signal, CD
- 11 - CD Data in
- 12 - CD CLK





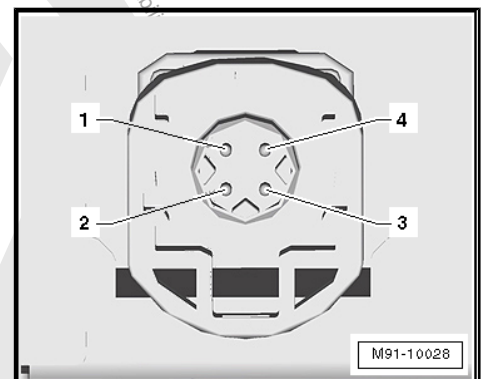
## 26-Pin Multi-Pin Connector 5, Video- and LF Input

- 5 - Video Output LF Right
- 6 - Video Output Ground
- 7 - Video Output Sync
- 8 - Video Output Green
- 10 - Video Input LF Right
- 11 - Video Input Ground
- 12 - Video Input Sync
- 13 - Video Input Green
- 17 - Video Output LF Ground
- 18 - Video Output LF Left
- 19 - Video Output RGBS (-)
- 20 - Video Output Blue
- 21 - Video Output Red
- 22 - Video Output LF (-)
- 23 - Video Input LF Left
- 24 - Video Input RGBS (-)
- 25 - Video Input Blue
- 26 - Video Input Red



## 4-Pin USB Connection

- 1 - Ground
- 2 - D (-)
- 3 - VCC (+5 V)
- 4 - D (+)



## 4.5.8 Connector Assignments, RCD 320G



## 1 - Antenna Connection

- ☐ AM/FM
- ☐ Antenna systems. Refer to  
⇒ ["3 Antenna Systems",  
page 18](#) .

## 2 - 8-Pin Multi-Pin Connector 1, Speaker Outputs

- ☐ Terminal assignment.  
Refer to ⇒ [page 64](#) .

## 3 - Multi-Pin Connector 2, 8-pin

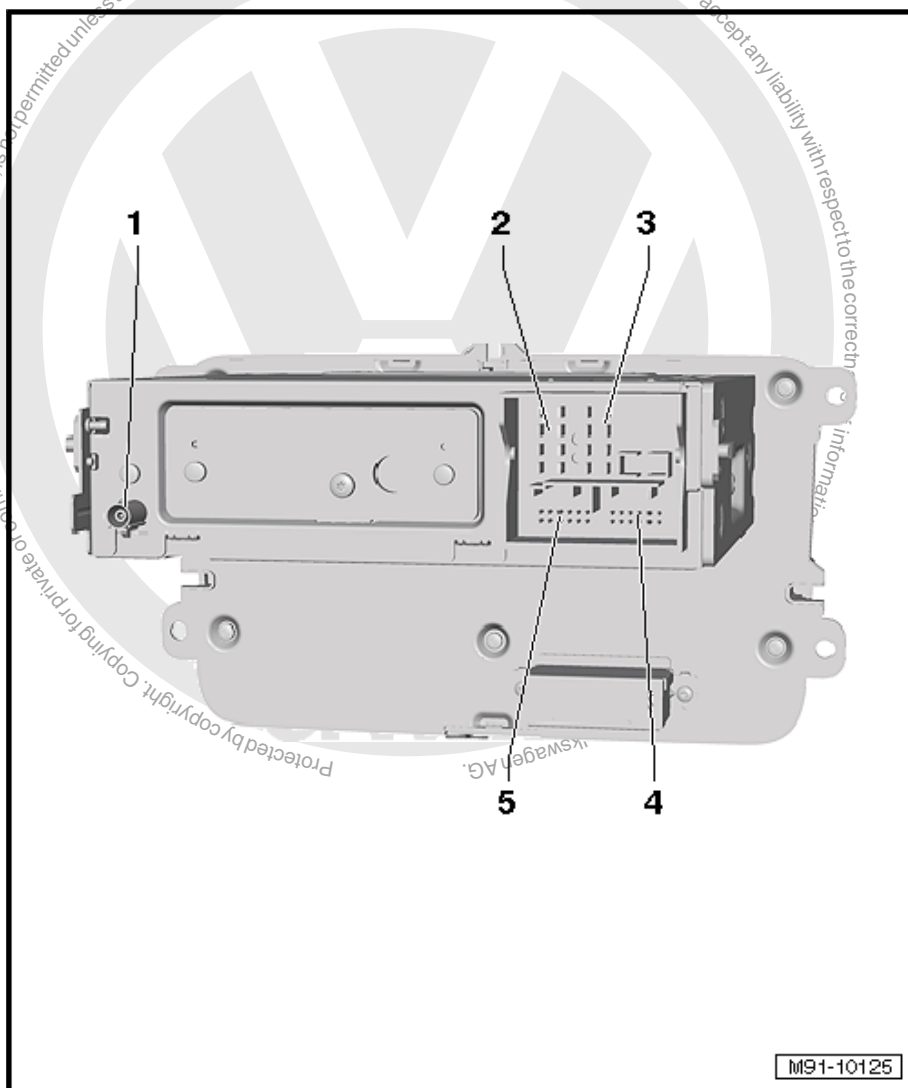
- ☐ Not Assigned

## 4 - 12-Pin Multi-Pin Connector 3, Telephone

- ☐ Terminal assignment

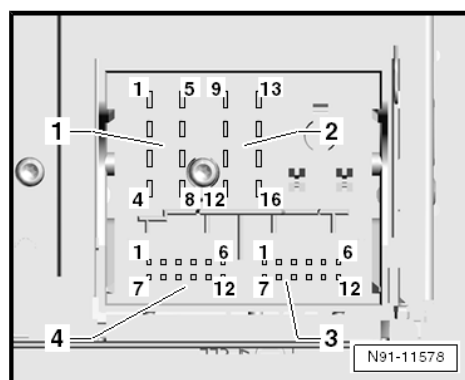
## 5 - Multi-Pin Connector 4, 12- pin, CAN Bus, Power Supply

- ☐ Terminal assignment.  
Refer to ⇒ [page 65](#) .



## 8-Pin Multi-Pin Connector 1, Speaker Outputs

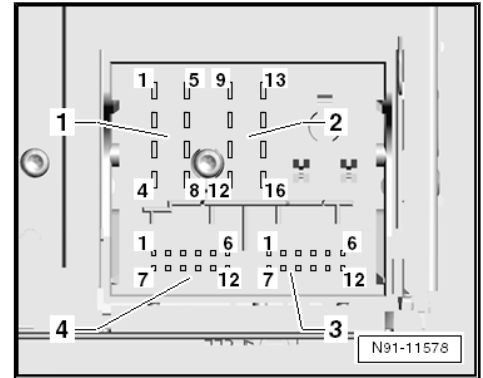
- 1 - Right Rear Speaker (+)
- 2 - Right Rear Speaker (-)
- 3 - Right Front Speaker (-)
- 4 - Right Front Speaker (-)
- 5 - Left Front Speaker (+)
- 6 - Left Front Speaker (+)
- 7 - Left Rear Speaker (+)
- 8 - Left Rear Speaker (-)





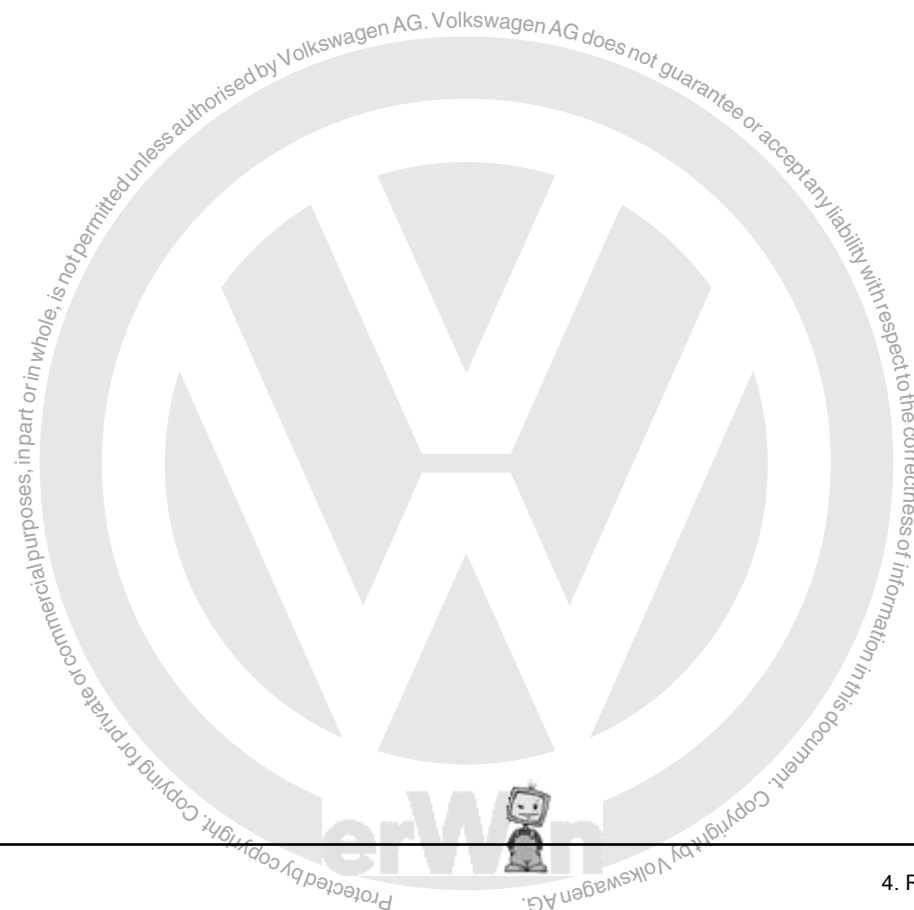
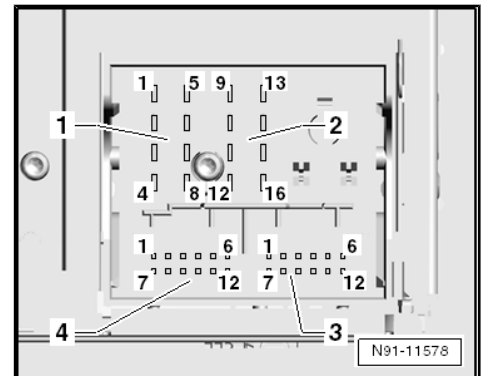
### Multi-Pin Connector 3, 8-Pin, Telephone

- 6 - Telephone, LF Signal Input (-)
- 12 - Telephone, LF Signal Input (+)



### 12-Pin Multi-Pin Connector 4, Power Supply, CAN Bus

- 9 - CAN Bus High
- 10 - CAN Bus Low
- 12 - Terminal 31
- 13 - Radio Switch on Signal
- 15 - Terminal 30
- 16 - Continuous Positive, Connected with PIN 15, Anti-Theft Alarm System





## 5 Telephone System

⇒ [“5.1 Overview - Telephone”, page 66](#)

⇒ [“5.2 Component Location Overview - Telephone System”, page 71](#)

⇒ [“5.3 Telephone Microphone R38 , Removing and Installing”, page 74](#)

⇒ [“5.4 Telephone Baseplate R126 , Removing and Installing”, page 74](#)

⇒ [“5.5 Telephone Transceiver, Removing and Installing”, page 75](#)

⇒ [“5.6 Cell Phone Operating Electronics Control Module J412 , Removing and Installing, UMI”, page 76](#)

⇒ [“5.7 Cellular Telephone Preparation Control Head, Removing and Installing”, page 79](#)

⇒ [“5.8 Connector Assignments”, page 80](#)

### 5.1 Overview - Telephone

⇒ [“5.1.1 Overview - Telephone, UHV High with Bluetooth”, page 66](#)

⇒ [“5.1.2 Overview - Telephone, UHV Premium with Bluetooth and Audio Streaming”, page 67](#)

⇒ [“5.1.3 Overview - Telephone, UHV in RNS 315”, page 68](#)

⇒ [“5.1.4 Overview - Telephone, UMI”, page 69](#)

#### 5.1.1 Overview -Telephone, UHV High with Bluetooth

The cell phone preparation “UHV High” is offered only together with a radio/RNS.

The “UHV high” is a permanently installed telephone ( Telephone Transceiver - R36- ) with wireless access to stored telephone data via a Bluetooth Cellular Telephone - R54- .

The “UHV high” requires that the Cellular Telephone - R54- to be paired has a Bluetooth interface and supports the “Remote SIM Access Profile” (rSAP).

With “rSAP”, telephone entries, for example, can be accessed on the Cellular Telephone - R54- SIM card.

Use the Vehicle Diagnostic Tester in the “Guided Fault Finding” function when servicing or performing fault finding.



## 1 - Sound System

2 - Radio - R- , Radio/Navigation Display Unit Control Module - J503-

3 - Telephone Microphone - R38-

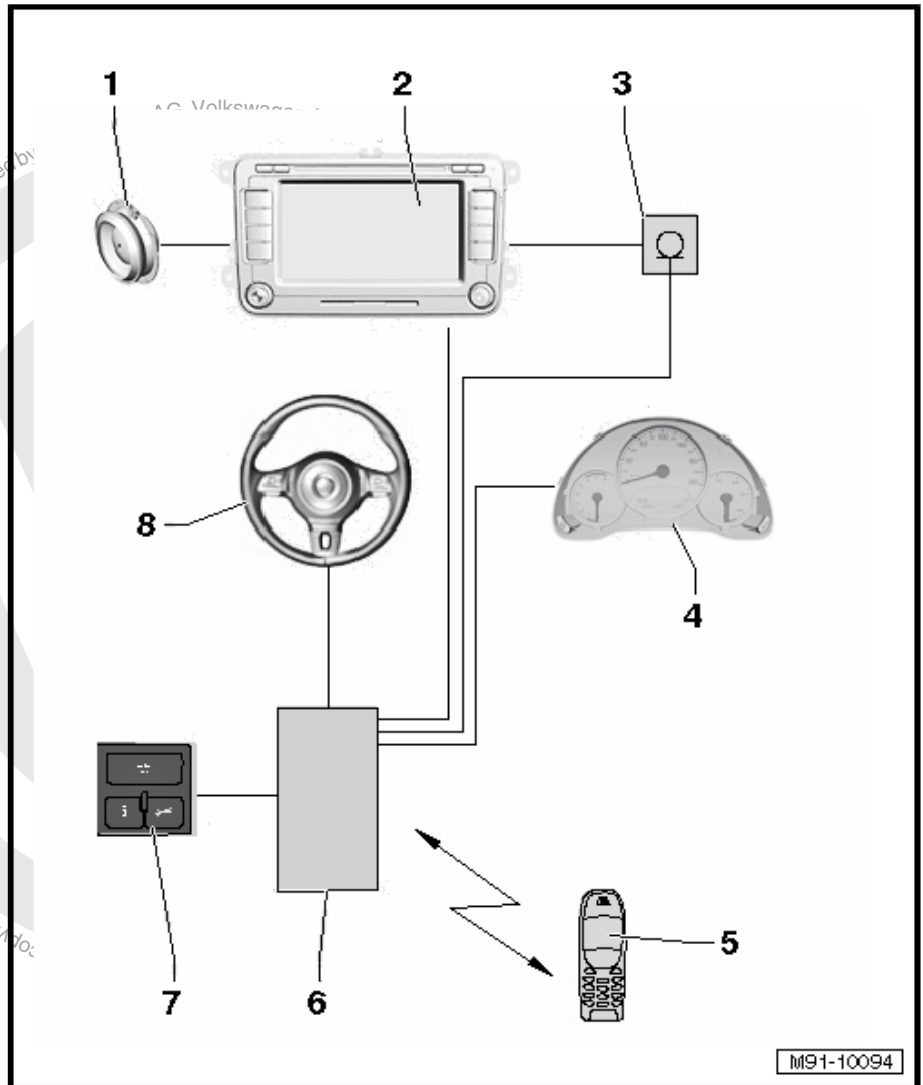
4 - Instrument Cluster Control Module - J285-

5 - Cellular Telephone - R54-

6 - Telephone Transceiver - R36-

7 - Cellular Telephone Preparation Control Head - E508-

8 - Multifunction Steering Wheel



### 5.1.2 Overview - Telephone, UHV Premium with Bluetooth and Audio Streaming

The cell phone preparation "UHV Premium" is offered only together with a radio/RNS.

The "UHV Premium" has two Bluetooth profiles:

- ◆ HFP is short for "Hands Free Profile" and is for the telephone audio/speaking channel. Pure speaking data is transmitted here.
- ◆ Music files in the registered Bluetooth device are sent in stereo quality to the Telephone Transceiver - R36- using the Bluetooth profile "ASDP audio streaming". A larger quantity of data files can be transmitted as pure language files.

Use the Vehicle Diagnostic Tester in the "Guided Fault Finding" function when servicing or performing fault finding.

## 1 - Sound System

2 - Radio - R- , Radio/Navigation Display Unit Control Module - J503-

3 - Telephone Microphone - R38-

4 - Instrument Cluster Control Module - J285-

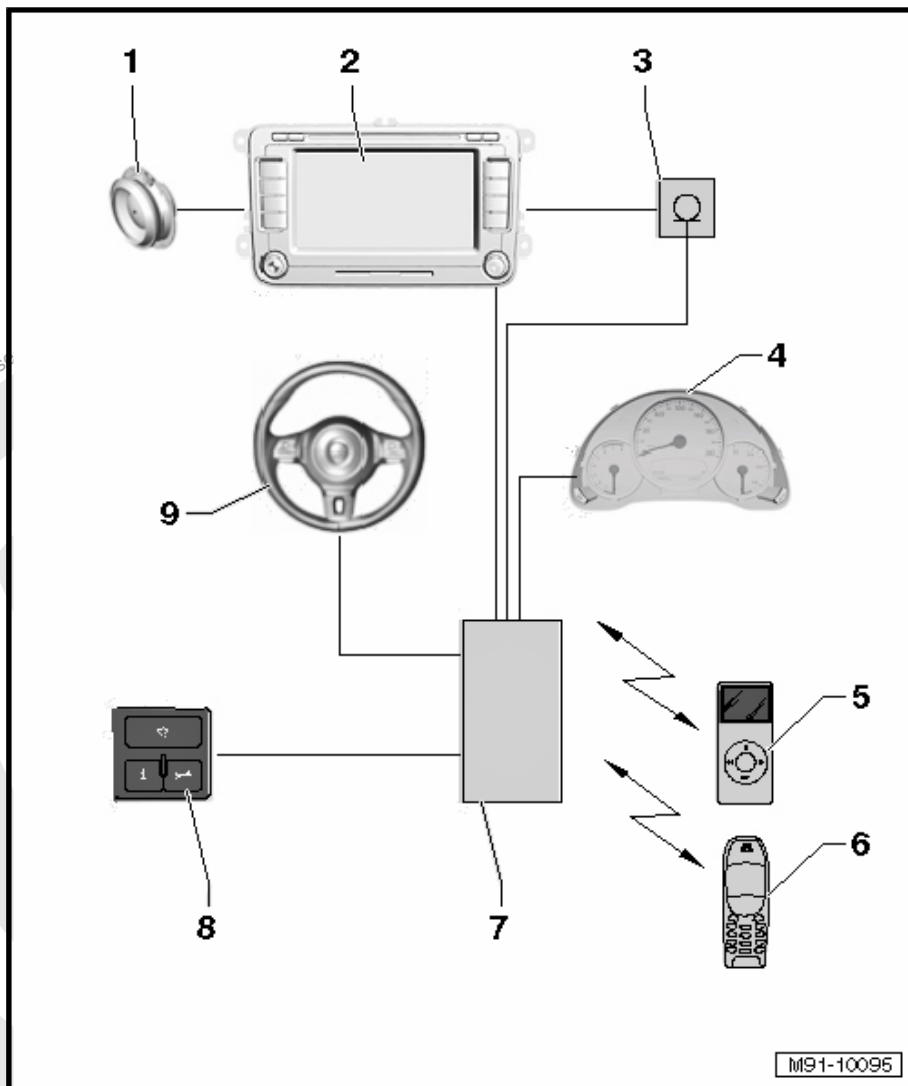
5 - External Multimedia Player

6 - Cellular Telephone - R54-

7 - Telephone Transceiver - R36-

8 - Cellular Telephone Preparation Control Head - E508-

9 - Multifunction Steering Wheel



### 5.1.3 Overview - Telephone, UHV in RNS 315

The "UHV" with "RNS 315" is comprised from the "RNS 315" with an integrated telephone and Bluetooth module. The Cellular Telephone - R54- is connected via Bluetooth.





1 - Instrument Cluster Control Module - J285-

2 - Telephone Microphone - R38-

3 - Speaker System

4 - Cellular Telephone - R54-

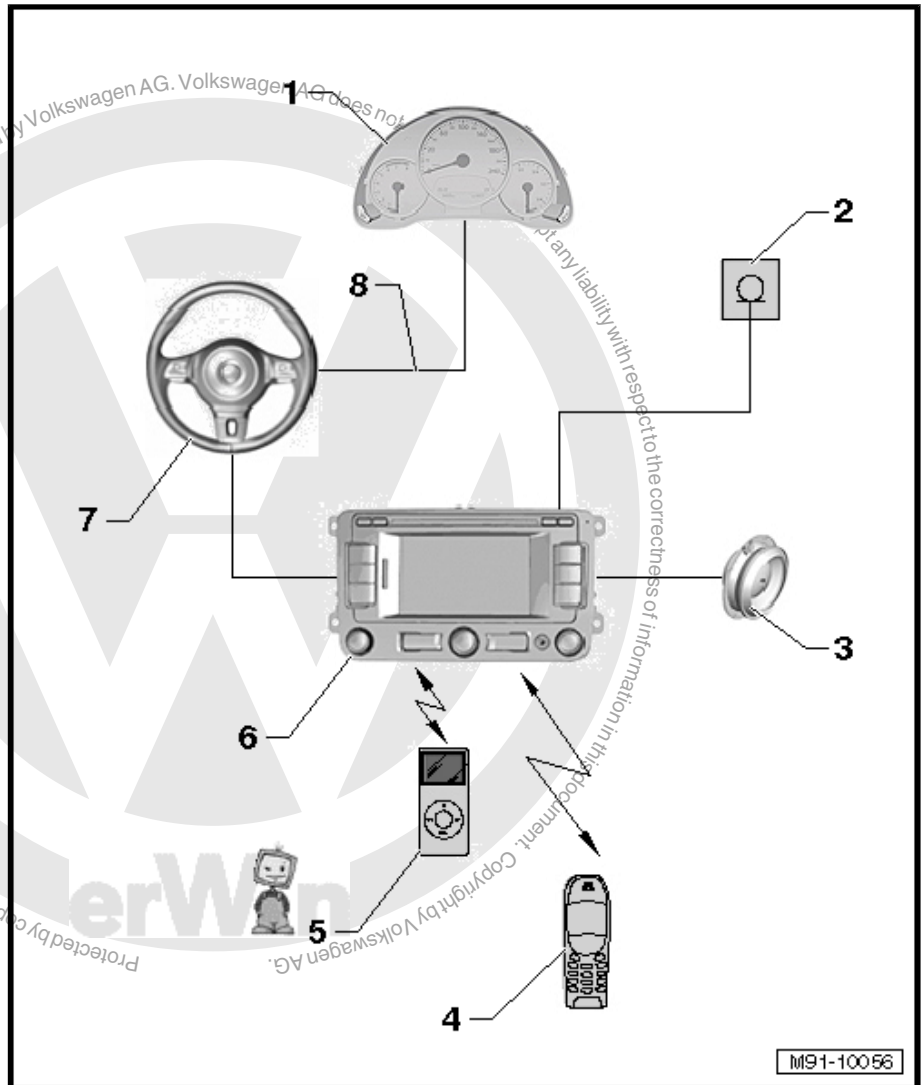
5 - External Multimedia Player

6 - Radio/Navigation Display Unit Control Module - J503-

- RNS 315. Refer to  
⇒ ["6.1.1 Overview - Navigation System, RNS 315", page 85](#).

7 - Multifunction Steering Wheel

8 - CAN Bus



## 5.1.4 Overview - Telephone, UMI



### Note

- ◆ The UHV High and the MDI are housed together ( Cell Phone Operating Electronics Control Module - J412- ) near the UMI, Universal Media Interface. The Cellular Telephone - R54- is connected via Bluetooth.
- ◆ The functions of the UHV High and MDI are combined in one device ( Cell Phone Operating Electronics Control Module - J412- ).



# 1 - Speaker System

## 2 - Radio/Navigation Display Unit Control Module - J503-

## 3 - Multifunction Steering Wheel

## 4 - CAN Bus

## 5 - Telephone Microphone - R38-

## 6 - Adapter Wire

- ❑ One for each device be-  
ing connected

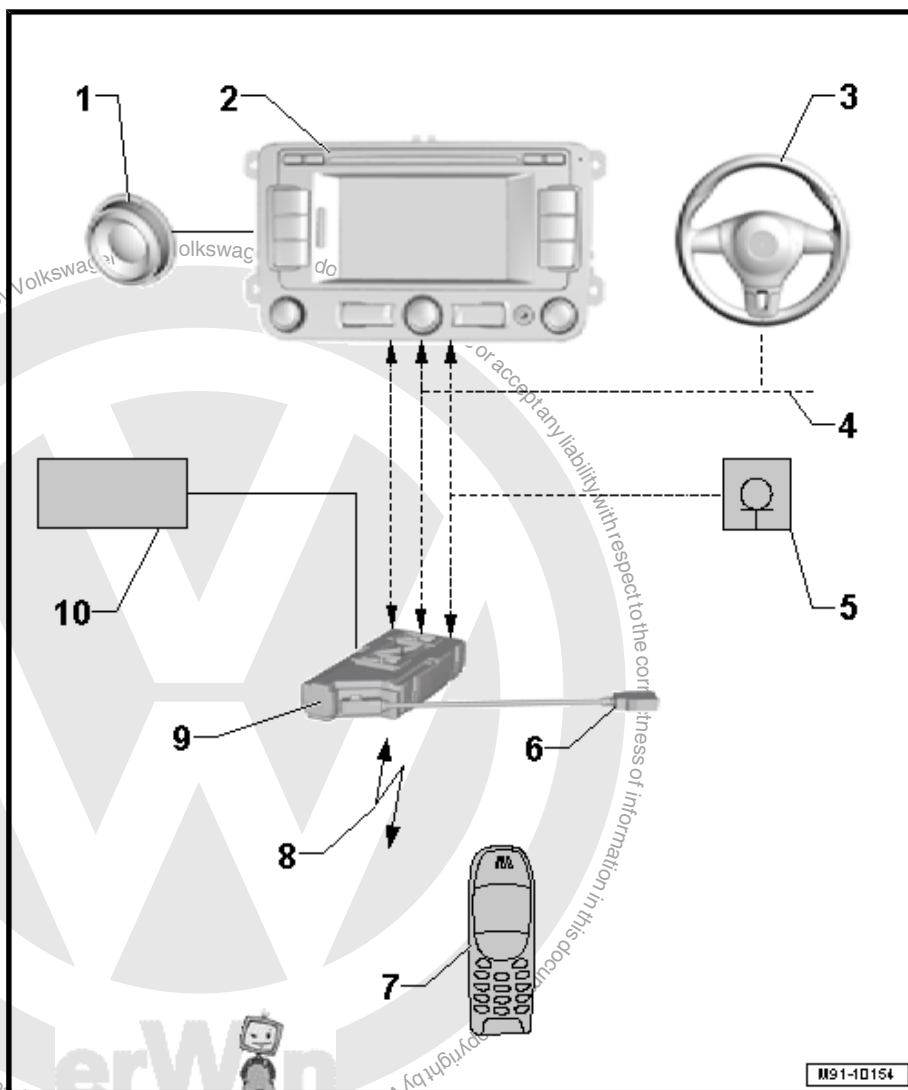
## 7 - Cellular Telephone - R54-

## 8 - Bluetooth Connection

## 9 - Cell Phone Operating Elec- tronics Control Module - J412- , UMI

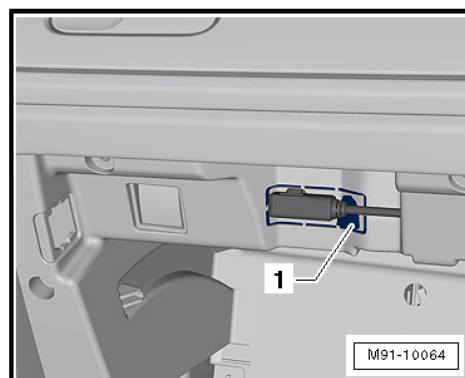
- ❑ Different component lo-  
cations (in the glove  
compartment. Refer to  
⇒ [page 70](#) or in the  
center console. Refer to  
⇒ [page 71](#) )

## 10 - Multi-pin Connector, 54- pin



## Component Location UMI, UMI-Control Module in the Glove Compartment

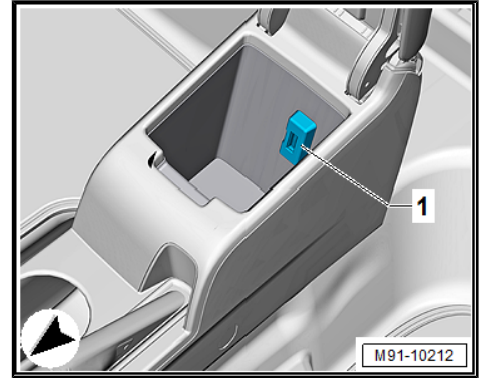
The Cell Phone Operating Electronics Control Module - J412-  
-1- is installed in the glove compartment.





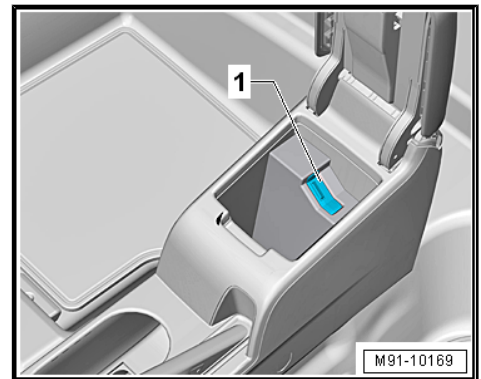
#### Note

*On some vehicles, the UMI control module is installed on the glove compartment, but the connection -1- for the device-specific adapter cable was routed in the storage compartment under the center armrest in the center console.*



#### UMI Component Location, UMI Control Module in the Center Console

The Cell Phone Operating Electronics Control Module - J412-1- is installed in the center console.



## 5.2 Component Location Overview - Telephone System

⇒ ["5.2.1 Component Location Overview - Telephone System", page 71](#)

⇒ ["5.2.2 Component Location Overview - Telephone System, UMI", page 73](#)

### 5.2.1 Component Location Overview - Telephone System



#### 1 - Telephone Baseplate - R126-

- ❑ Screws: 2 Nm
- ❑ Removing and Installing. Refer to  
⇒ [“5.4 Telephone Baseplate R126, Removing and Installing”, page 74](#) .

#### 2 - Telephone Transceiver - R36-

- ❑ Under the right front seat
- ❑ Connector Assignment. Refer to  
⇒ [“5.8.1 Telephone Transceiver R36 Connector Assignment”, page 80](#) .
- ❑ Removing and Installing. Refer to  
⇒ [“5.5 Telephone Transceiver, Removing and Installing”, page 75](#) .

#### 3 - Foam Insert

#### 4 - Telephone Microphone - R38-

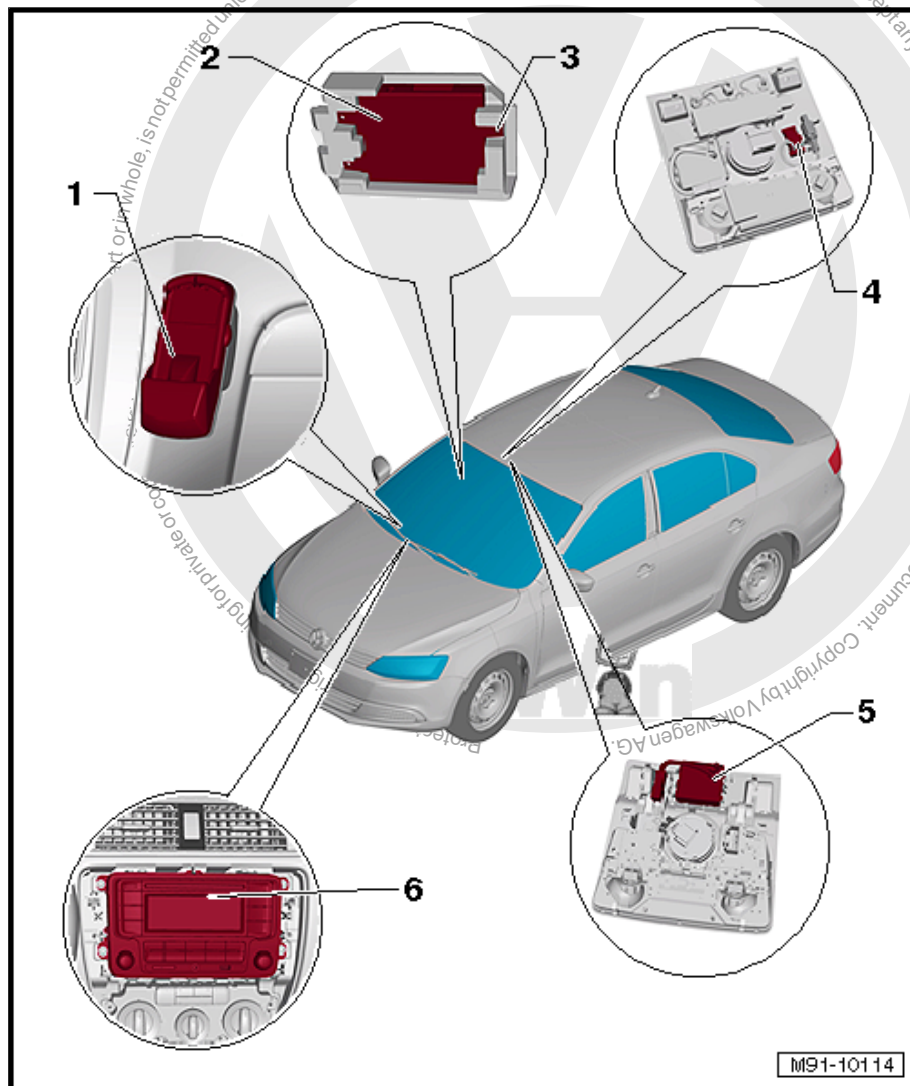
- ❑ In the Front Interior Lamp - W1-
- ❑ Removing and Installing. Refer to  
⇒ [“5.3 Telephone Microphone R38, Removing and Installing”, page 74](#) .

#### 5 - Cellular Telephone Preparation Control Head - E508-

- ❑ In the Front Interior Lamp - W1-
- ❑ Removing and Installing. Refer to  
⇒ [“5.7 Cellular Telephone Preparation Control Head, Removing and Installing”, page 79](#) .

#### 6 - Radio/RNS

- ❑ Radio. Refer to ⇒ [“4 Radio”, page 24](#)
- ❑ RNS. Refer to ⇒ [“6 Navigation System”, page 85](#) .





## 5.2.2 Component Location Overview - Telephone System, UMI

### 1 - Not Installed

### 2 - Not Installed

### 3 - Telephone Microphone - R38-

- ☐ In the Front Interior Lamp - W1-
- ☐ Removing and Installing. Refer to  
⇒ ["5.3 Telephone Microphone R38 , Removing and Installing", page 74](#) .

### 4 - Cellular Telephone Preparation Control Head - E508-

- ☐ In the Front Interior Lamp - W1-
- ☐ Removing and Installing. Refer to  
⇒ ["5.7 Cellular Telephone Preparation Control Head, Removing and Installing", page 79](#) .

### 5 - Radio/RNS

- ☐ Radio. Refer to  
⇒ ["4 Radio", page 24](#)
- ☐ RNS. Refer to  
⇒ ["6 Navigation System", page 85](#) .

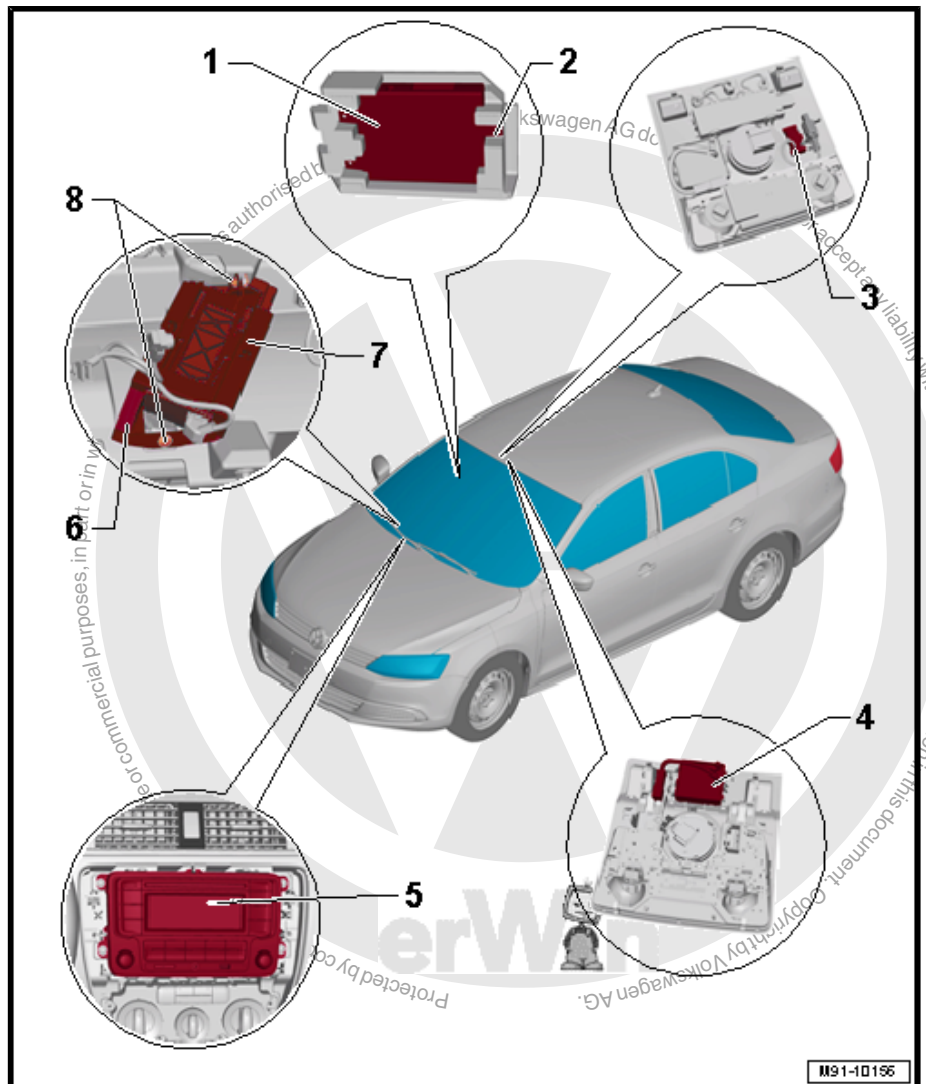
### 6 - Bracket

### 7 - Cell Phone Operating Electronics Control Module - J412- , UMI

- ☐ Different component locations:
  - In the glove compartment. Refer to  
⇒ [Fig. "Component Location UMI, UMI-Control Module in the Glove Compartment", page 70](#)
  - In the center console. Refer to  
⇒ [Fig. "UMI Component Location, UMI Control Module in the Center Console", page 71](#)
- ☐ UMI Control Module on Glove Compartment, Removing and Installing. Refer to  
⇒ ["5.6.1 Cell Phone Operating Electronics Control Module J412 , Removing and Installing, UMI Control Module in the Glove Compartment", page 76](#) .
- ☐ UMI Control Module in Center Console, Removing and Installing. Refer to  
⇒ ["5.6.2 Cell Phone Operating Electronics Control Module J412 , Removing and Installing, UMI Control Module in Center Console", page 78](#) .

### 8 - Bolt

- ☐ 1.5 Nm
- ☐ Quantity: 2



M91-10156





### 5.3 Telephone Microphone - R38- , Removing and Installing

The Telephone Microphone - R38- is installed in the Front Interior Lamp - W1- .

#### Removing

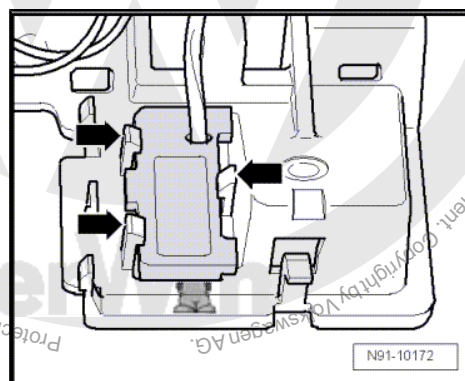
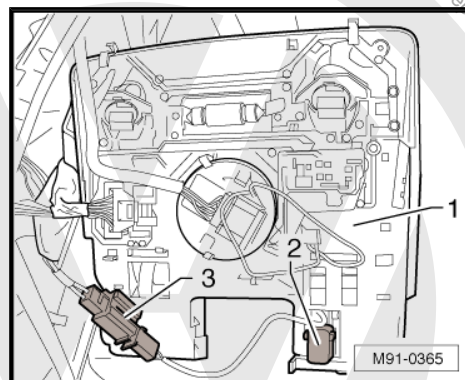
- Turn off the ignition and all electrical equipment and remove the ignition key.
- Remove the Front Interior Lamp - W1- . Refer to ➤ Electrical Equipment; Rep. Gr. 96 ; Controls; Component Location Overview - Controls in Roof Trim Panel .
- Disconnect the connector -3-.

The Telephone Microphone - R38- is clipped into the Front Interior Lamp - W1- -1- with three hooks.

- Open the three hooks -arrows- and remove the Telephone Microphone - R38- .

#### Installing

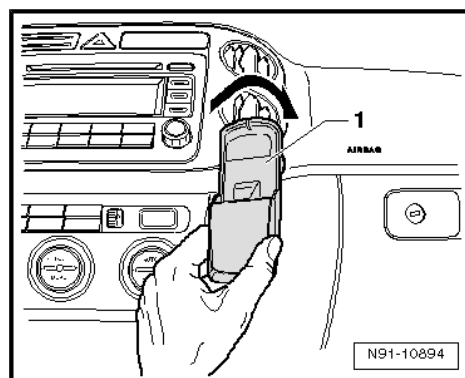
Install in reverse order of removal.



### 5.4 Telephone Baseplate - R126- , Removing and Installing

#### Removing

- Turn off the ignition and all electrical equipment and remove the ignition key.
- Remove the Cellular Telephone - R54- from the Telephone Baseplate - R126- .
- Turn the Telephone Baseplate - R126- -1- clockwise -arrow- and loosen the bracket.



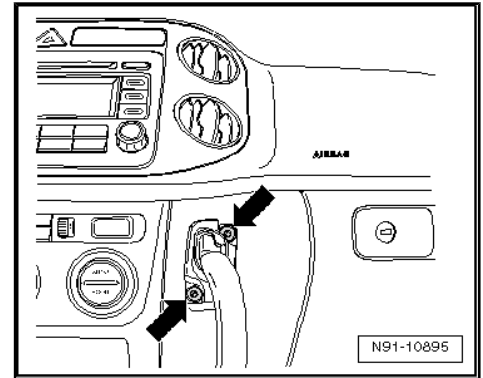


- Remove the screws -arrows-.
- Remove the wiring harness.
- Release and disconnect the connector.

### Installing

Install in reverse order of removal.

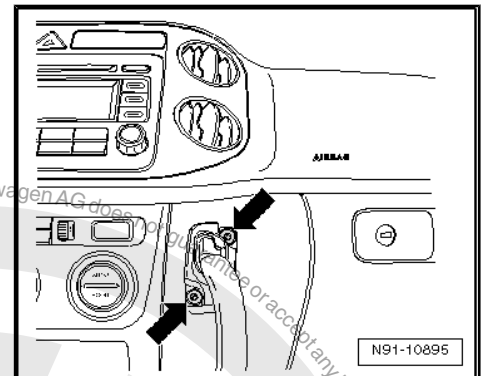
- Connect the connector and install the wiring harness back into the instrument panel.



- Attach the Telephone Baseplate - R126- mount -arrows-.
- Clip the Telephone Baseplate - R126- to the mount.

### Tightening Specifications

- ◆ Refer to  
⇒ ["5.2 Component Location Overview - Telephone System," page 71](#)

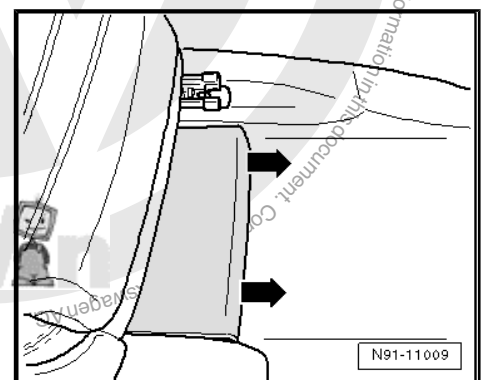


## 5.5 Telephone Transceiver, Removing and Installing

The Telephone Transceiver - R36- is installed under the front right seat.

### Removing

- Turn off the ignition and all electrical equipment and remove the ignition key.
- Move the right front seat into its highest position and move it all the back.
- Remove the cover under the seat in the direction of the -arrow-.
- Release and disconnect the connectors from the Telephone Transceiver - R36- .

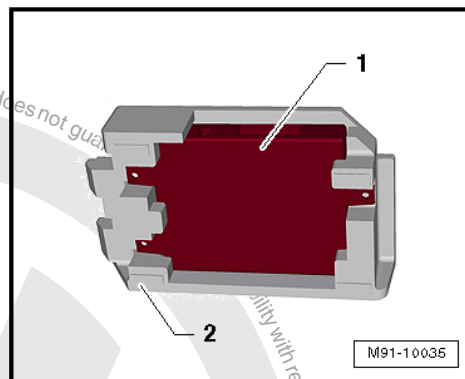




- Remove the Telephone Transceiver - R36- -1- from the foam insert -2-.

#### Installing

Install in reverse order of removal.



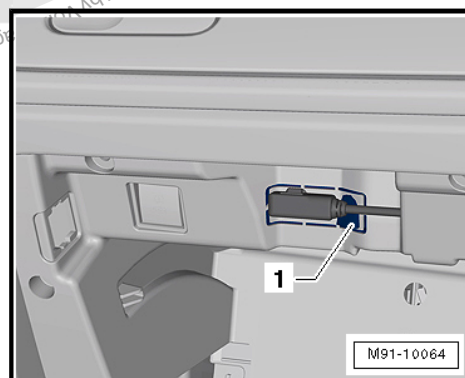
## 5.6 Cell Phone Operating Electronics Control Module - J412- , Removing and Installing, UMI

⇒ [“5.6.1 Cell Phone Operating Electronics Control Module J412, Removing and Installing, UMI Control Module in the Glove Compartment”, page 76](#)

⇒ [“5.6.2 Cell Phone Operating Electronics Control Module J412, Removing and Installing, UMI Control Module in Center Console”, page 78](#)

### 5.6.1 Cell Phone Operating Electronics Control Module - J412- , Removing and Installing, UMI Control Module in the Glove Compartment

The Cell Phone Operating Electronics Control Module - J412- -1- is attached to the glove compartment.

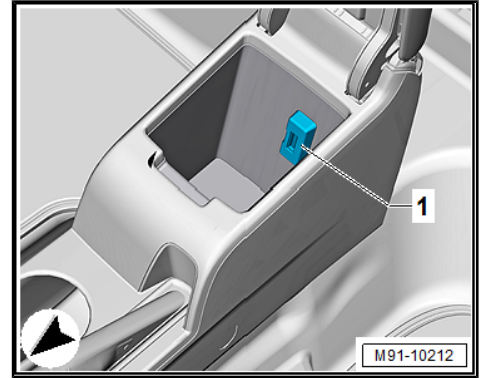






## Note

- ◆ On some vehicles, the Cell Phone Operating Electronics Control Module - J412- is installed on the glove compartment, but the connection -1- for the device-specific adapter cable was routed in the storage compartment under the center armrest in the center console.
- ◆ If the connection -1- for the device-specific adapter cables corresponds to the image shown, then the Cell Phone Operating Electronics Control Module - J412- is installed on the glove compartment. Refer to Cell Phone Operating Electronics Control Module - J412- , Removing. Refer to [⇒ page 77](#) .
- ◆ Connection -1- for Device-Specific Adapter Cable, Removing and Installing. Refer to [⇒ "9.3.7 Connection for Device-Specific Adapter Cable, Removing and Installing", page 128](#)



## Removing

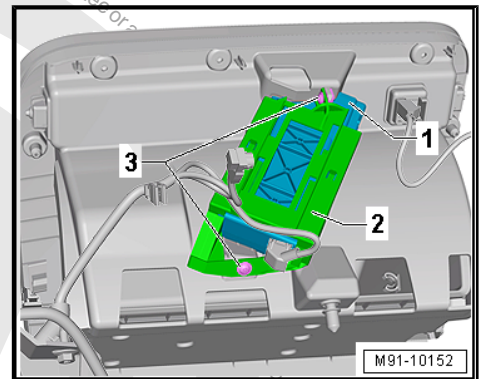
- Switch off the ignition and all electrical equipment and remove the ignition key.
- Disconnect any devices connected to the Cell Phone Operating Electronics Control Module - J412- .
- Remove the glove compartment. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments/Covers; Overview - Glove Compartment .
- Release and disconnect the connector from the Cell Phone Operating Electronics Control Module - J412- .
- Remove the screws -3- and remove the Cell Phone Operating Electronics Control Module - J412- -1- with the bracket -2-.
- Remove the bracket -2- from the Cell Phone Operating Electronics Control Module - J412- -1-.

## Installing

Install in reverse order of removal.

## Tightening Specifications

- ◆ Refer to [⇒ "5.2.2 Component Location Overview - Telephone System, UMI", page 73](#)





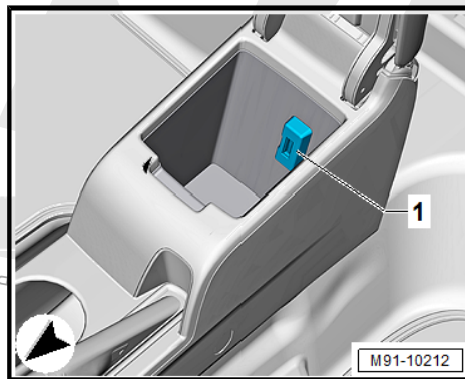
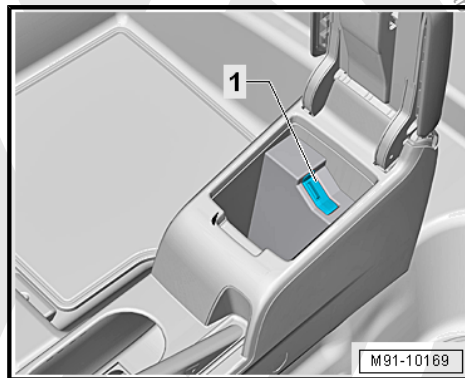
## 5.6.2 Cell Phone Operating Electronics Control Module - J412- , Removing and Installing, UMI Control Module in Center Console

The Cell Phone Operating Electronics Control Module - J412- -1- is installed in the center console.



### Note

- ◆ On some vehicles, the Cell Phone Operating Electronics Control Module - J412- is installed on the glove compartment, but the connection -1- for the device-specific adapter cable was routed in the storage compartment under the center armrest in the center console.
- ◆ Therefore a visual inspection of the connection -1- for the device-specific adapter cable must be performed in the storage compartment under the center armrest.
- ◆ If the connection -1- for the device-specific adapter cable corresponds to the image shown, then the Cell Phone Operating Electronics Control Module - J412- is installed on the glove compartment. Refer to Cell Phone Operating Electronics Control Module - J412- , Removing. Refer to ⇒ [page 77](#) .
- ◆ Connection -1- for Device-Specific Adapter Cable, Removing and Installing. Refer to ⇒ ["9.3.7 Connection for Device-Specific Adapter Cable, Removing and Installing", page 128](#)

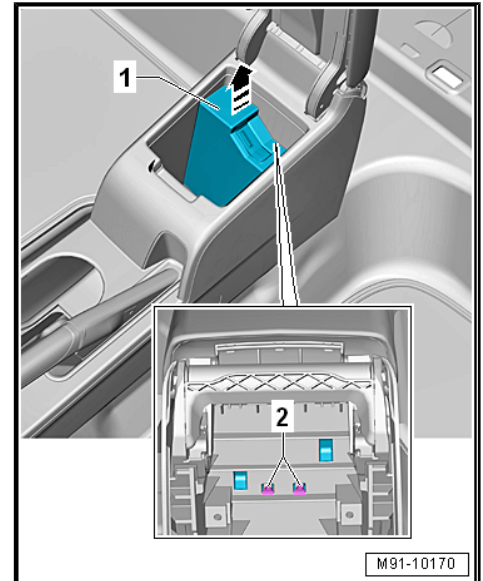


### Removing

- Switch off the ignition and all electrical equipment and remove the ignition key.
- Disconnect any devices connected to the Cell Phone Operating Electronics Control Module - J412- .
- Remove the rear center console trim. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Center Console; Rear Center Console Trim »Comfort and Highline«, Removing and Installing .



- Release the retainers -2- on the bracket for the Cell Phone Operating Electronics Control Module - J412- -1-.
- Pull the Cell Phone Operating Electronics Control Module - J412- -1- upward out of the center console with the bracket and trim -arrow- until the connector is accessible.
- Release and disconnect the connector from the Cell Phone Operating Electronics Control Module - J412- .



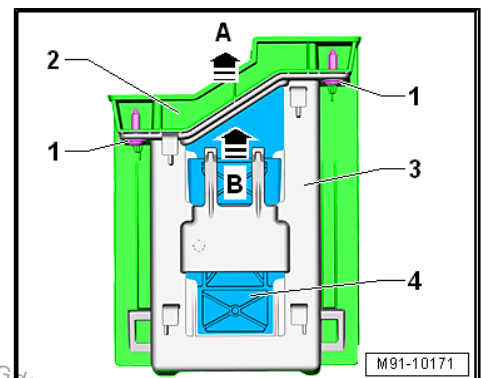
- Remove the screws -1-.
- Remove the trim -2- in the direction of -arrow A- from the bracket -3-.
- Remove the Cell Phone Operating Electronics Control Module - J412- -4- from the bracket -3- in the direction of -arrow B-.

#### Installing

Install in reverse order of removal.

#### Tightening Specifications

Component	Tightening Specification
Screw for trim to bracket	2 Nm

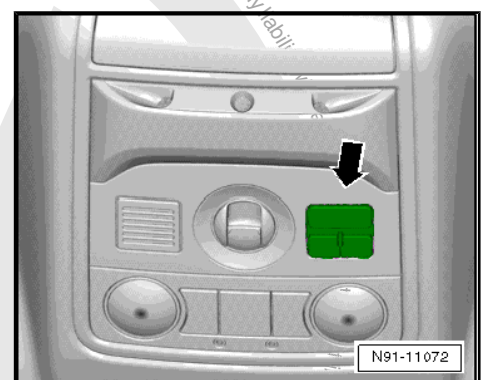


## 5.7 Cellular Telephone Preparation Control Head, Removing and Installing

The Cellular Telephone Preparation Control Head - E508- -arrow- is located in the Front Interior Lamp - W1- .

#### Removing

- Turn off the ignition and all electrical equipment and remove the ignition key.
- Remove the Front Interior Lamp - W1- . Refer to ⇒ Electrical Equipment; Rep. Gr. 96 ; Controls; Component Location Overview - Controls in Roof Trim Panel .

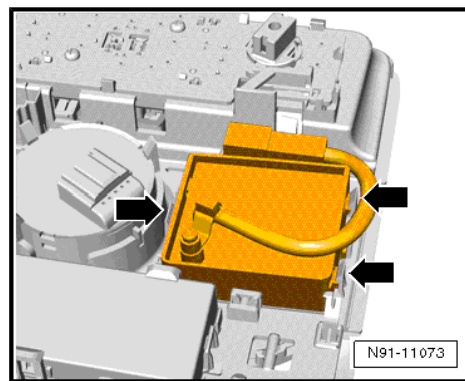




- Open the three hooks -arrows- and remove the Cellular Telephone Preparation Control Head - E508- .
- Release and disconnect the connector from the Cellular Telephone Preparation Control Head - E508- .

#### Installing

Install in reverse order of removal.



## 5.8 Connector Assignments

⇒ ["5.8.1 Telephone Transceiver R36 Connector Assignment", page 80](#)

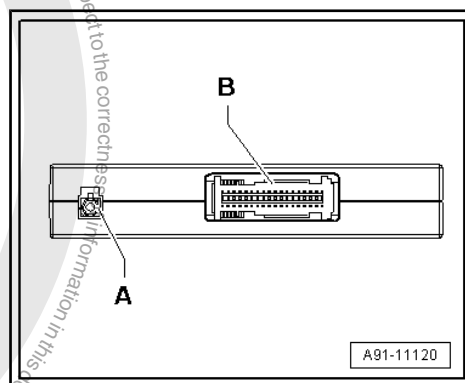
⇒ ["5.8.2 Cell Phone Operating Electronics Control Module J412 Connector Assignment", page 81](#)

### 5.8.1 Telephone Transceiver - R36- Connector Assignment

#### Telephone Transceiver - R36-

A - GSM connection, Telephone Antenna - R65- , only on UHV Premium Light

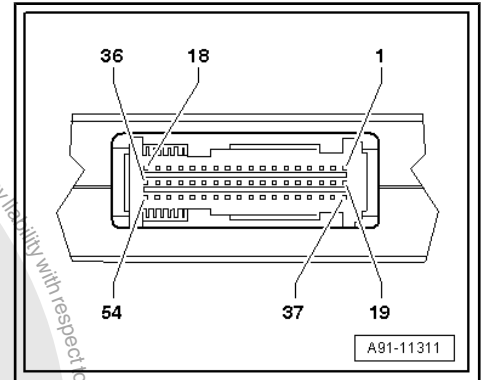
B - Multi-pin connector, 54-pin





## B - Multi-Pin Connector, 54-Pin

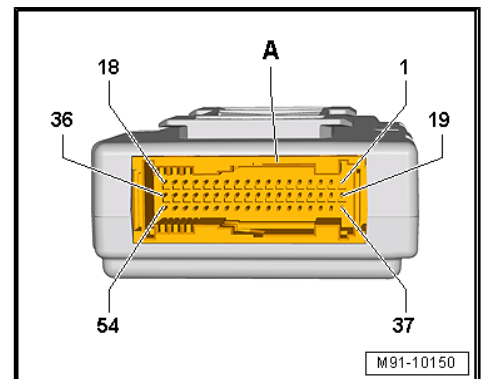
- 1 - Terminal 30
- 2 - Terminal 31
- 8 - LF (+) to Radio - R-
- 9 - LF (-) to Radio - R-
- 11 - Telephone Microphone - R38- (+)
- 12 - Telephone Microphone - R38- (-)
- 17 - CAN Bus High
- 18 - CAN Bus Low
- 27 - Cellular Telephone Preparation Control Head - E508-
- 28 - Cellular Telephone Preparation Control Head - E508-
- 30 - Cellular Telephone Preparation Control Head - E508-
- 31 - Cellular Telephone Preparation Control Head - E508-
- 37 - Telephone Baseplate - R126-
- 38 - Telephone Baseplate - R126-
- 39 - Telephone Baseplate - R126-
- 40 - Telephone Baseplate - R126-
- 44 - Telephone Baseplate - R126-
- 47 - Telephone Baseplate - R126-
- 48 - Telephone Baseplate - R126-



## 5.8.2 Cell Phone Operating Electronics Control Module - J412- Connector Assignment

Cell Phone Operating Electronics Control Module - J412-

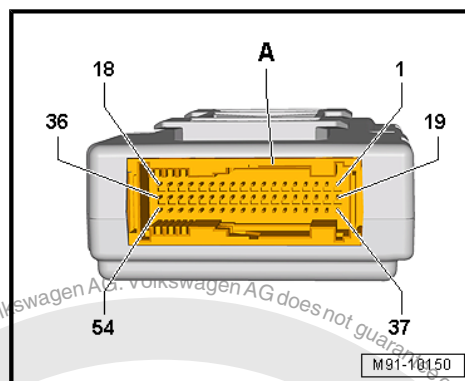
A - Multi-pin connector, 54-pin





## A - Multi-Pin Connector, 54-Pin

- 1 - Terminal 30
- 2 - Terminal 31
- 3 - Switch-On Signal
- 4 - Tel-LF (+) left to Radio - R-
- 5 - Tel-LF (-) left to Radio - R-
- 6 - LF (+) from Control Module for Emergency Call Module and Communication Unit - J949-
- 7 - LF (-) from Control Module for Emergency Call Module and Communication Unit - J949-
- 8 - Tel-LF (+) right to Radio - R-
- 9 - Tel-LF (-) right to Radio - R-
- 10 - Not Assigned
- 11 - Telephone Microphone - R38- (+) from RNS
- 12 - Telephone Microphone - R38- (-) from RNS
- 13 - Not Assigned
- 14 - Not Assigned
- 15 - Not Assigned
- 16 - Not Assigned
- 17 - CAN Bus High
- 18 - CAN Bus Low
- 19 - Not Assigned
- 20 - Not Assigned
- 21 - Not Assigned
- 22 - LF (+) right to Radio - R- , MDI
- 23 - LF (+) left to Radio - R- , MDI
- 24 - LF ground to the Radio - R- , MDI
- 25 - Not Assigned
- 26 - Not Assigned
- 27 - Not Assigned
- 28 - Not Assigned
- 29 - Not Assigned
- 30 - Cellular Telephone Preparation Control Head - E508-
- 31 - Cellular Telephone Preparation Control Head - E508-
- 32 - Not Assigned
- 33 - Left audio signal from External Audio Source Connection - R199- , AUX IN
- 34 - Right audio signal from External Audio Source Connection - R199- , AUX IN
- 35 - Audio ground from External Audio Source Connection - R199- , AUX IN
- 36 - Audio ground shielding from External Audio Source Connection - R199- , AUX IN







- 37 - Not Assigned
- 38 - Terminal 30 to Telephone Baseplate - R126-
- 39 - Not Assigned
- 40 - DIAG signal from Telephone Baseplate - R126-
- 41 - Not Assigned
- 42 - Not Assigned
- 43 - Not Assigned
- 44 - Not Assigned
- 45 - Not Assigned
- 46 - Not Assigned
- 47 - Wake UP to Telephone Baseplate - R126-
- 48 - DIAG signal from Telephone Baseplate - R126-
- 49 through 54 - Not Assigned







## 6 Navigation System

⇒ [“6.1 Overview - Navigation System”, page 85](#)

⇒ [“6.2 Component Location Overview - Navigation System”, page 92](#)

⇒ [“6.3 Connector Assignments”, page 93](#)

⇒ [“6.4 Navigation System Control Module, Removing and Installing”, page 101](#)

⇒ [“6.5 Vehicle Positioning System Control Module, Removing and Installing”, page 102](#)

### 6.1 Overview - Navigation System

⇒ [“6.1.1 Overview - Navigation System, RNS 315”, page 85](#)

⇒ [“6.1.2 Overview - Navigation System, RNS 315+”, page 88](#)

⇒ [“6.1.3 Overview - Navigation System, RNS 510”, page 90](#)

#### 6.1.1 Overview - Navigation System, RNS 315

##### Radio/Navigation System RNS 315

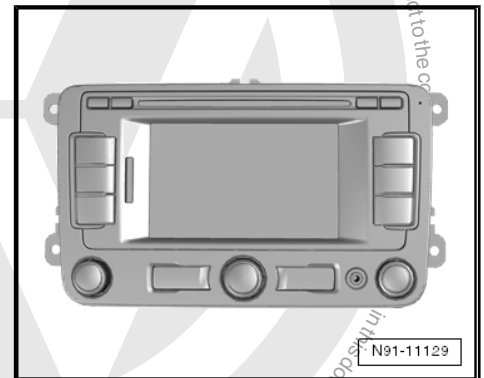
Familiarity with the function and operation is needed if there are customer concerns. Refer to the Owner's Manual.

For proper function of the RNS, rotation angle sensor in unit must be set corresponding to installation position of unit in the vehicle. Therefore, always pay close attention to the part number when replacing the unit. An incorrect installation causes malfunctions in the navigation system.

By the use of magnetically adhered antennae on vehicle roof, there is the hazard that the compass module will malfunction due to magnetic influence and remaining magnetization of the vehicle roof. For complaints of inaccurate or faulty direction displays on the compass module, ask the customer whether a magnetically adhered antenna is being used before starting repair work.

The RNS 315 radio/navigation system has the following:

- ◆ Display: 5 inch color display
- ◆ Integrated CD player
- ◆ SD Card Reader
- ◆ UHV Low/Premium (stereo input)
- ◆ Navigation function using a 3D card and language
- ◆ CD/SD Navigation (Navigation without a CD inserted)
- ◆ Integrated optional DAB tuner
- ◆ 4 speaker channels, each with 20 W
- ◆ Connection for Multimedia System Control Module - J650-
- ◆ External Audio Source Connection - R199- on the front of the unit
- ◆ Connection for an external CD Changer - R41-
- ◆ Connection for external sound amplifier ( Amplifier - R12- )
- ◆ OPS (optical parking system) on the radio display
- ◆ A/C information shown in the radio display
- ◆ Optional support for the multifunction steering wheel





- ◆ Convenience coding
- ◆ An optional universal cellular telephone preparation (UHV) with an integrated Bluetooth antenna

It is not possible to play the following CD formats:

- ◆ 8 cm CDs
- ◆ "Mix CDs" (CDs containing files and audio files)

The RNS 315 is equipped with OBD.

For troubleshooting, use the Vehicle Diagnostic Tester in the "Guided Fault Finding" function.

### Repairing Antenna Wires

Antenna wires, repairing. Refer to ⇒ Electrical Equipment; Rep. Gr. 97 ; Antenna Wires, Repairing .

### Electronic Anti-Theft Protection

The RNS is equipped with an anti-theft coding, which operates in conjunction with the instrument cluster.

After disconnecting the radio power supply, the RNS (Radio Navigation System) is ready for use again once the power supply is connected. The anti-theft code does not need to be entered again. The anti-theft coding must be activated for the first time and the radio navigation system must be connected in the same vehicle.

Use the Vehicle Diagnostic Tester to get the anti-theft code. The radio card and the label on the RNS (Radio Navigation System) that were used in the past are no longer used.

The Vehicle Diagnostic Tester must be connected "online" to determine the anti-theft code. The user must have the proper authorization to access the radio code.

### Use the Vehicle Diagnostic Tester to get the Anti-Theft Code:

- Connect the Vehicle Diagnostic Tester .
- Select Guided Functions.
- Use the GO TO button to select the "function/component selection" and the following menu options one after the other:

- ◆ Body
- ◆ Electrical Equipment
- ◆ 01-OBD-capable system
- ◆ Corresponding radio/navigation system
- ◆ Radio/navigation system functions
- ◆ Radio code inquiry

Authorization will be requested from the system: Then the operating data, the VIN and the radio serial number of the radio/navigation system will be automatically read out.



### Note

*It is possible that the Vehicle Diagnostic Tester will not be able to read the serial number when a new RNS is installed. In this case, enter the device number manually. The serial number can be found on a sticker on the unit and is also stamped into the side of the RNS (Radio Navigation System).*

The Vehicle Diagnostic Tester will display the anti-theft code.



The anti-theft code must be entered manually into the RNS.

**Deactivating the Electronic Anti-Theft Protection:**

- Turn on the RNS.

“SAFE” appears in the display for approximately 10 seconds, after that “1000” is displayed.

- Enter the correct anti-theft code using the keyboard on the input screen.
- Press the input button to confirm in the entry.

The RNS is enabled and ready for operation.

Use the correction button to erase an incorrect code.

If an incorrect anti-theft code is entered, the code can be corrected immediately in another attempt. If anti-theft code is entered incorrectly twice, then the RNS is locked for an hour. Leave the RNS and ignition on. The procedure for deactivating the anti-theft coding can be repeated after one hour.

Note: the anti-theft code can be entered two times. After that, the RNS locks up for one hour.



## 6.1.2 Overview - Navigation System, RNS 315+

### Radio/Navigation System RNS 315+

Familiarity with the function and operation is needed if there are customer concerns. Refer to the Owner's Manual.

The RNS 315+ radio/navigation system has the following:

- ◆ Display: 5 inch color display
- ◆ Integrated CD player
- ◆ SD Card Reader
- ◆ UHV Low/Premium
- ◆ Navigation function using a 3D card and language
- ◆ CD/SD Navigation (Navigation without a CD inserted)
- ◆ 4 speaker channels, each with 20 W
- ◆ Connection for Multimedia System Control Module - J650-
- ◆ Connection for the External Audio Source Connection - R199-
- ◆ Connection for an external CD Changer - R41-
- ◆ Connection for external sound amplifier ( Amplifier - R12- )
- ◆ USB Connection
- ◆ OPS (Optical Parking System)
- ◆ A/C information shown in the radio display
- ◆ Optional support for the multifunction steering wheel
- ◆ Convenience coding
- ◆ An optional universal cellular telephone preparation (UHV) with an integrated Bluetooth antenna

It is not possible to play the following CD formats:

- ◆ 8 cm CDs
- ◆ "Mix CDs" (CDs containing files and audio files)

The RNS 315+ is equipped with OBD.

For troubleshooting, use the Vehicle Diagnostic Tester in the "Guided Fault Finding" function.

### Repairing Antenna Wires

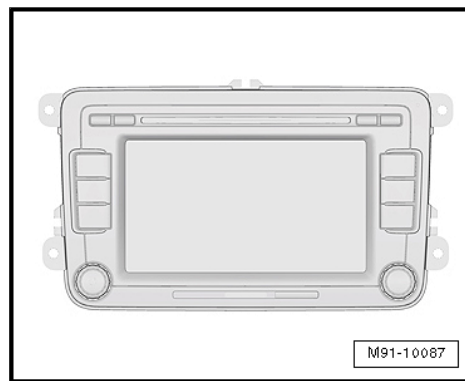
Antenna wires, repairing. Refer to Rep. Gr. 97 ; Antenna Wires, Repairing

### Electronic Anti-Theft Protection

The RNS is equipped with an electronic anti-theft protection, which operates in conjunction with the instrument cluster. The radio code is stored internally inside the RNS and inside the instrument cluster.

After disconnecting the voltage to the RNS, it is ready for use and the radio code does not need to be entered again. The requirement is that the first activation of the electronic anti-theft system follows and that the RNS is reconnected in the same vehicle.

Use the Vehicle Diagnostic Tester to get the radio code. The radio card and the label on the RNS (Radio Navigation System) that were used in the past are no longer used.





#### Note

*The Vehicle Diagnostic Tester must be "online" to retrieve the radio code and the user must be authorized to access radio codes.*

Reactivating a locked RNS is only possible by entering correct number code for anti-theft protection.

#### Determine the Radio Code using the Vehicle Diagnostic Tester :

- Connect the Vehicle Diagnostic Tester .
- Select the **Guided Fault Finding** mode.
- Use the **GO TO** button to select the "function/component selection" and the following menu options one after the other:
  - ◆ Body
  - ◆ Electrical Equipment
  - ◆ 01-OBD-capable system
  - ◆ Corresponding radio/navigation system
  - ◆ Radio/navigation system functions
  - ◆ Radio code inquiry

Authorization will be requested from the system: Then the operating data, the VIN and the radio serial number of the radio/navigation system will be automatically read out.



#### Note

*It is possible that the Vehicle Diagnostic Tester will not be able to read the serial number when a new RNS is installed. In this case, enter the device number manually. This can be found on a sticker on the unit and is also stamped into the side of the RNS.*

The Vehicle Diagnostic Tester will display the anti-theft code.

Manually enter the radio code in the RNS.

#### Deactivating the Electronic Anti-Theft Protection:

- Turn on the RNS.

"SAFE" appears in the display for approximately 10 seconds, after that "1000" is displayed.

- Enter the correct radio code using the buttons on the input screen.
- Press the input button to confirm in the entry.

The RNS is enabled and ready for operation.

Use the correction button to erase an incorrect code.

It is possible to enter the radio code again if it was entered incorrectly. If radio code is entered incorrectly twice, then the RNS is locked for an hour. Leave the RNS and ignition on. The process can be repeated again after an hour. Note: Always two attempts, after that the RNS will lock up for one hour.



## 6.1.3 Overview - Navigation System, RNS 510

### Radio/Navigation System RNS 510

Familiarity with the function and operation is needed if there are customer concerns. Refer to the Owner's Manual.

For proper function of the RNS, rotation angle sensor in unit must be set corresponding to installation position of unit in the vehicle. Therefore, always pay close attention to the part number when replacing the unit. An incorrect installation causes malfunctions in the navigation system.

By the use of magnetically adhered antennae on vehicle roof, there is the hazard that the compass module will malfunction due to magnetic influence and remaining magnetization of the vehicle roof. For complaints of inaccurate or faulty direction displays on the compass module, ask the customer whether a magnetically adhered antenna is being used before starting repair work.

The RNS 510 radio/navigation system has the following:

- ◆ Display: 6.5 inch color display with touch screen
- ◆ Integrated DVD player for navigation, video and audio
- ◆ A hard drive disc is installed in the unit for storing data
- ◆ SD Card Reader
- ◆ UHV Low/Premium (stereo input)
- ◆ Memory for traffic conditions (Travel Information Memory - TIM)
- ◆ Corridor function
- ◆ 4 speaker channels, each with 20 W
- ◆ Connection for Multimedia System Control Module - J650-
- ◆ External Audio Source Connection - R199-
- ◆ Connection for an external CD Changer - R41-
- ◆ Connection for external sound amplifier ( Amplifier - R12- )
- ◆ OPS (optical parking system) on the radio display
- ◆ A/C information shown in the radio display
- ◆ Optional support for the multifunction steering wheel
- ◆ Convenience coding
- ◆ Integrated optional DAB tuner
- ◆ Optional TV tuner
- ◆ Optional rearview camera

It is not possible to play the following CD formats:

- ◆ 8 cm CDs
- ◆ "Mix CDs" (CDs containing files and audio files)

The RNS 510 is equipped with OBD.

For troubleshooting, use the Vehicle Diagnostic Tester in the "Guided Fault Finding" function.

### Repairing Antenna Wires

Antenna wires, repairing. Refer to ⇒ Electrical Equipment; Rep. Gr. 97 ; Antenna Wires, Repairing .





## Electronic Anti-Theft Protection

The RNS is equipped with an anti-theft coding, which operates in conjunction with the instrument cluster.

After disconnecting the radio power supply, the RNS (Radio Navigation System) is ready for use again once the power supply is connected. The anti-theft code does not need to be entered again. The anti-theft coding must be activated for the first time and the radio navigation system must be connected in the same vehicle.

Use the Vehicle Diagnostic Tester to get the anti-theft code. The radio card and the label on the RNS (Radio Navigation System) that were used in the past are no longer used.

The Vehicle Diagnostic Tester must be connected "online" to determine the anti-theft code. The user must have the proper authorization to access the radio code.

### Use the Vehicle Diagnostic Tester to get the Anti-Theft Code:

- Connect the Vehicle Diagnostic Tester .
- Select **Guided Functions**.
- Use the **GO TO** button to select the "function/component selection" and the following menu options one after the other:
  - ◆ Body
  - ◆ Electrical Equipment
  - ◆ 01-OBd-capable system
  - ◆ Corresponding radio/navigation system
  - ◆ Radio/navigation system functions
  - ◆ Radio code inquiry

Authorization will be requested from the system: Then the operating data, the VIN and the radio serial number of the radio/navigation system will be automatically read out.



### Note

*It is possible that the Vehicle Diagnostic Tester will not be able to read the serial number when a new RNS is installed. In this case, enter the device number manually. The serial number can be found on a sticker on the unit and is also stamped into the side of the RNS (Radio Navigation System).*

The Vehicle Diagnostic Tester will display the anti-theft code.

The anti-theft code must be entered manually into the RNS.

### Deactivating the Electronic Anti-Theft Protection:

- Turn on the RNS.

"SAFE" appears in the display for approximately 10 seconds, after that "1000" is displayed.

- Enter the correct anti-theft code using the keyboard on the input screen.
- Press the input button to confirm in the entry.

The RNS is enabled and ready for operation.

Use the correction button to erase an incorrect code.



If an incorrect anti-theft code is entered, the code can be corrected immediately in another attempt. If anti-theft code is entered incorrectly twice, then the RNS is locked for an hour. Leave the RNS and ignition on. The procedure for deactivating the anti-theft coding can be repeated after one hour.

Note: the anti-theft code can be entered two times. After that, the RNS locks up for one hour.

## 6.2 Component Location Overview - Navigation System

### 1 - Radio/Navigation Display Unit Control Module - J503-

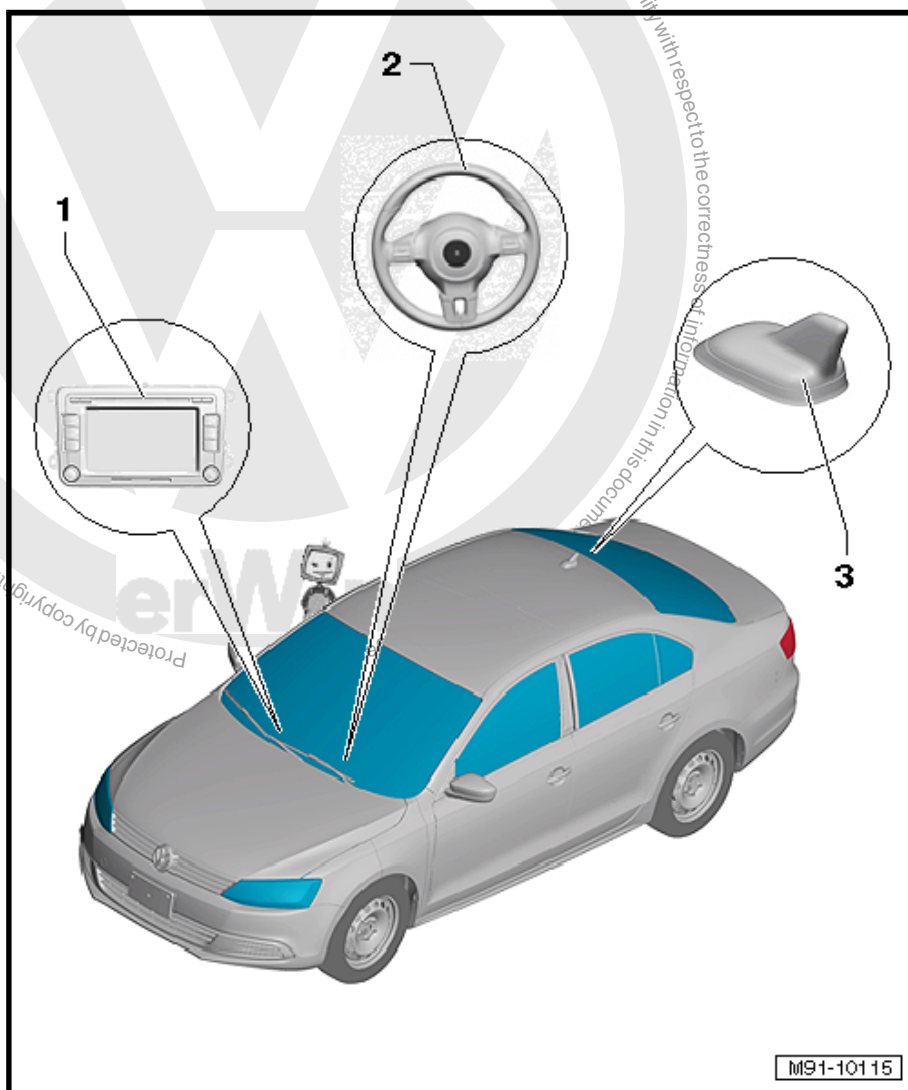
- ❑ Connector Assignments. Refer to  
⇒ [“6.3 Connector Assignments”, page 93](#).
- ❑ Removing and Installing. Refer to  
⇒ [“6.4 Navigation System Control Module, Removing and Installing”, page 101](#).

### 2 - Multifunction Steering Wheel

- ❑ Refer to  
⇒ [“8 Multifunction Steering Wheel”, page 107](#).

### 3 - GPS Antenna - R50-

- ❑ In roof antenna
- ❑ Antenna systems. Refer to  
⇒ [“3 Antenna Systems”, page 18](#).







## 6.3 Connector Assignments

⇒ [“6.3.1 Connector Assignments, RNS 315”, page 93](#)

⇒ [“6.3.2 Connector Assignments, RNS 315+”, page 95](#)

⇒ [“6.3.3 Connector Assignments, RNS 510”, page 97](#)

### 6.3.1 Connector Assignments, RNS 315

#### 1 - 8-Pin Multi-Pin Connector 1, Speaker Outputs

- ☐ Terminal assignment.  
Refer to ⇒ [page 94](#) .

#### 2 - 8-Pin Multi-Pin Connector 2, CAN Bus, Voltage Supply

- ☐ Terminal assignment.  
Refer to ⇒ [page 94](#) .

#### 3 - 12-Pin Multi-Pin Connector 3, Telephone

- ☐ Terminal assignment.  
Refer to ⇒ [page 94](#) .

#### 4 - 12-Pin Multi-Pin Connector 4, Multimedia System Control Module - J650-

- ☐ Terminal assignment.  
Refer to ⇒ [page 95](#) .

#### 5 - GPS Antenna - R50- Antenna Connection

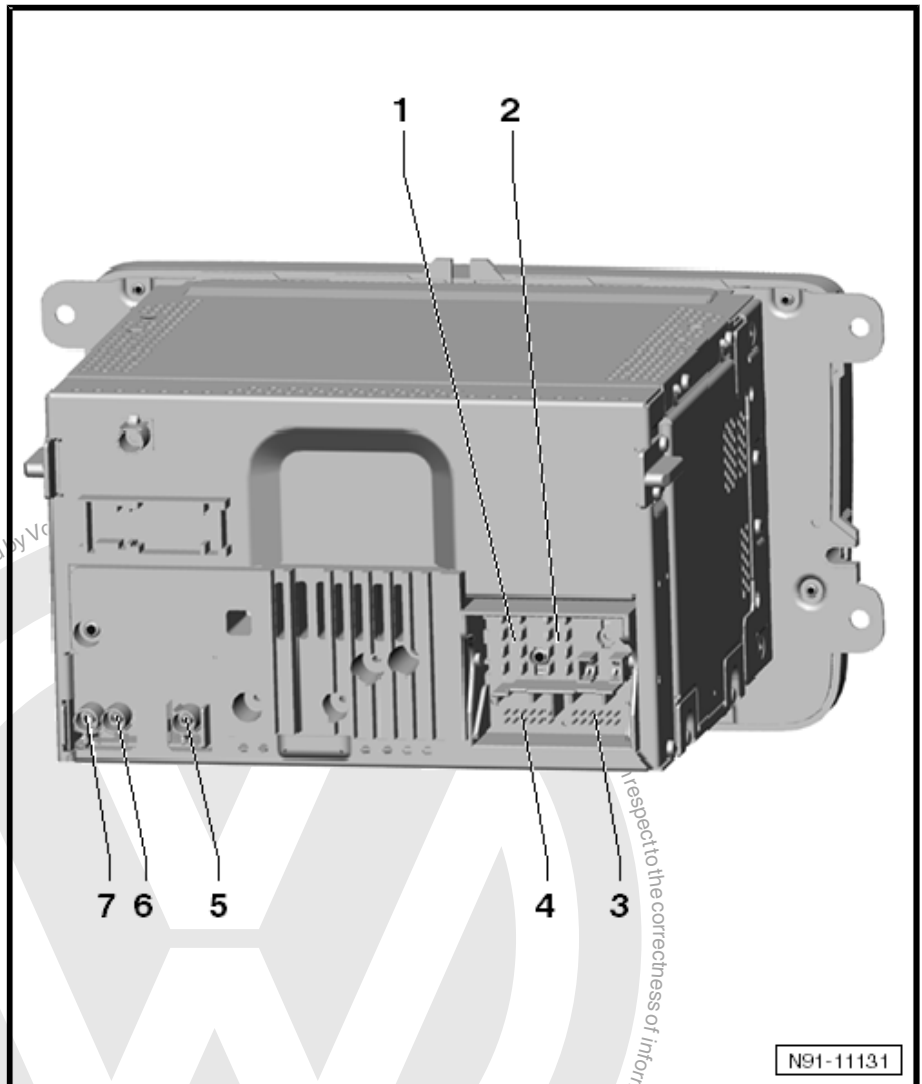
- ☐ GPS
- ☐ Antenna systems. Refer to  
⇒ [“3 Antenna Systems”,  
page 18](#) .

#### 6 - Antenna Connection

- ☐ FM2
- ☐ Antenna systems. Refer to  
⇒ [“3 Antenna Systems”,  
page 18](#) .

#### 7 - Antenna Connection

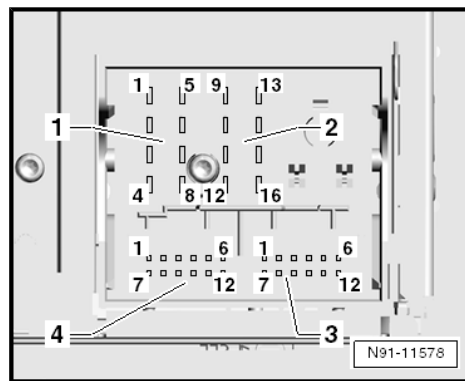
- ☐ AM/FM
- ☐ Antenna systems. Refer to  
⇒ [“3 Antenna Systems”, page 18](#) .





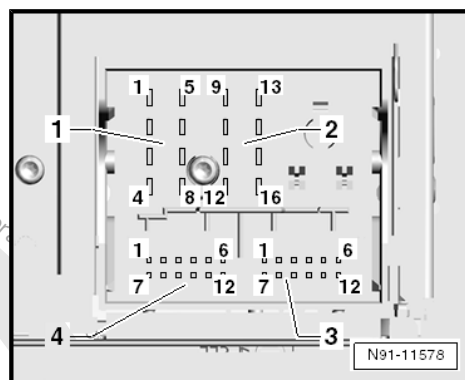
### 8-Pin Multi-Pin Connector 1, Speaker Outputs

- 1 - Right Rear Speaker (+)
- 2 - Right Front Speaker (-)
- 3 - Left Front Speaker (+)
- 4 - Left Rear Speaker (+)
- 5 - Right Rear Speaker (-)
- 6 - Right Front Speaker (-)
- 7 - Left Front Speaker (+)
- 8 - Left Rear Speaker (-)



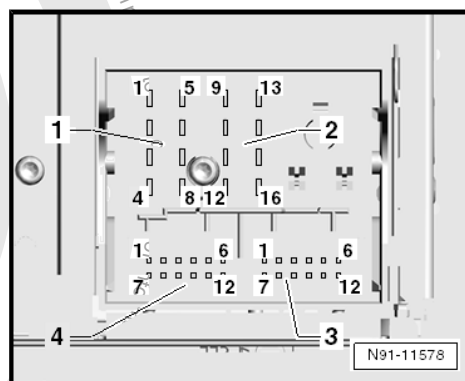
### 8-Pin Multi-Pin Connector 2, CAN Bus, Power Supply

- 9 - CAN Bus High
- 10 - CAN Bus Low
- 12 - Terminal 31
- 15 - Terminal 30
- 16 - Continuous Positive, Connected with PIN 15, Anti-Theft Alarm System



### 12-Pin Multi-Pin Connector 3, Telephone

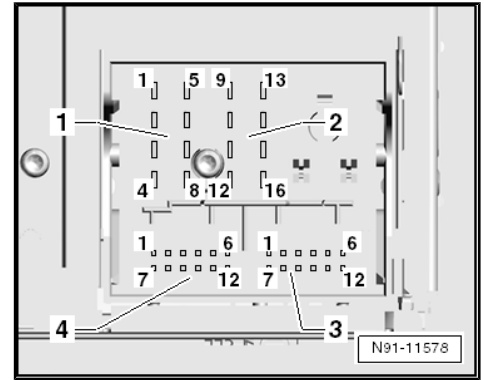
- 1 - Microphone Input (-)
- 2 - Not Assigned
- 3 - Not Assigned
- 4 - Microphone Output (-)
- 5 - Telephone, Low Frequency Signal Input Left (-)
- 6 - Telephone, Low Frequency Signal Input Right (-)
- 7 - Microphone Input (+)
- 8 - Not Assigned
- 9 - Microphone Output (+)
- 10 - Telephone, Mute
- 11 - Telephone, Low Frequency Signal Input Left (+)
- 12 - Telephone, Low Frequency Signal Input Right (+)





### 12-Pin Multi-Pin Connector 4, Multimedia System Control Module - J650-

- 1 - Left Audio Input Multimedia System Control Module - J650-
- 2 - Audio Input Ground Multimedia System Control Module - J650-
- 3 - Audio Ground, CD
- 4 - Terminal 30, CD
- 5 - Not Assigned
- 6 - CD Data out
- 7 - Right Audio Input Multimedia System Control Module - J650-
- 8 - Audio Left, CD
- 9 - Audio Right, CD
- 10 - Control Signal, CD
- 11 - CD Data in
- 12 - CD CLK



### 6.3.2 Connector Assignments, RNS 315+

#### 1 - 26-Pin Multi-Pin Connector, Video and LF Input

- ☐ Terminal assignment.  
Refer to ➤ [page 96](#) .

#### 2 - 8-Pin Multi-Pin Connector 1, Speaker Outputs

- ☐ Terminal assignment.  
Refer to ➤ [page 96](#) .

#### 3 - 8-Pin Multi-Pin Connector 2, CAN Bus, Voltage Supply

- ☐ Terminal assignment.  
Refer to ➤ [page 96](#) .

#### 4 - 12-Pin Multi-Pin Connector 3, Telephone

- ☐ Terminal assignment.  
Refer to ➤ [page 97](#) .

#### 5 - 12-Pin Multi-Pin Connector 4, Multimedia System Control Module - J650-

- ☐ Terminal assignment.  
Refer to ➤ [page 97](#) .

#### 6 - USB Connection

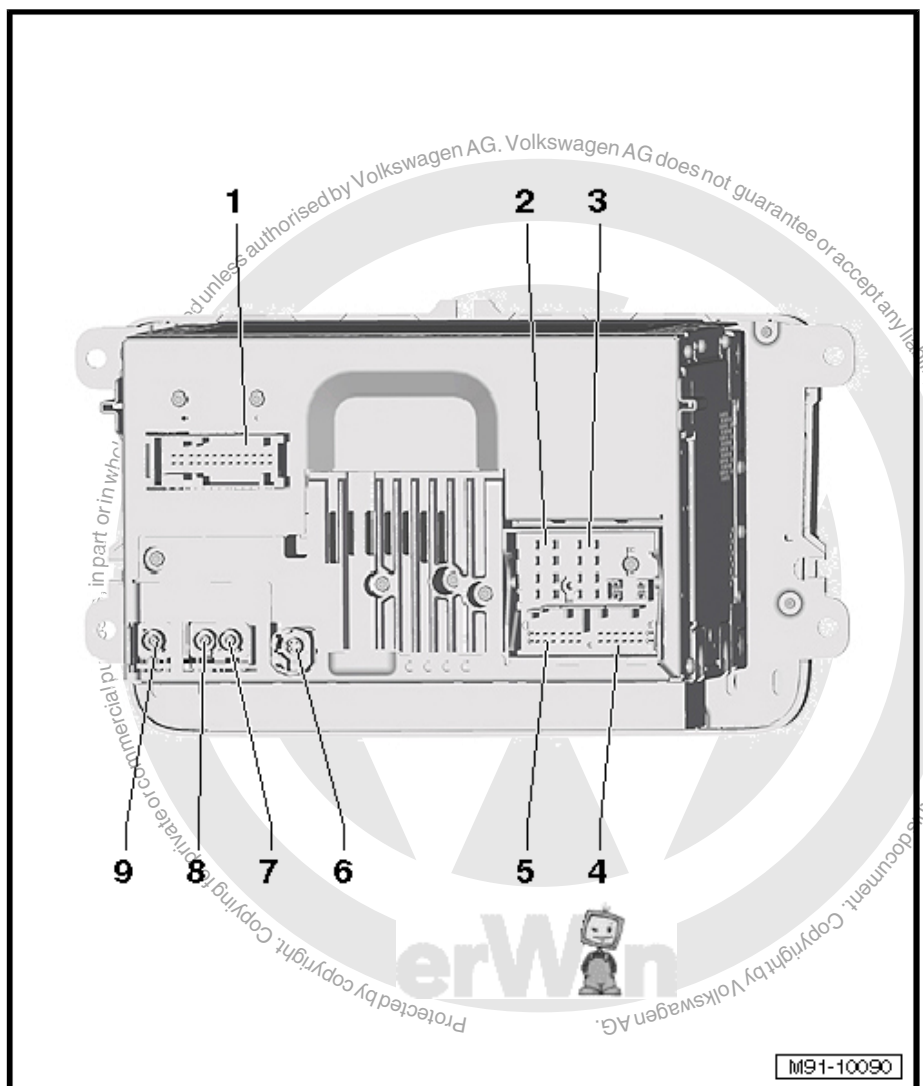
- ☐ Terminal assignment.  
Refer to ➤ [page 97](#) .

#### 7 - Antenna Connection

- ☐ FM2
- ☐ Antenna systems. Refer to  
➤ ["3 Antenna Systems"](#),  
[page 18](#) .

#### 8 - Antenna Connection

- ☐ AM/FM





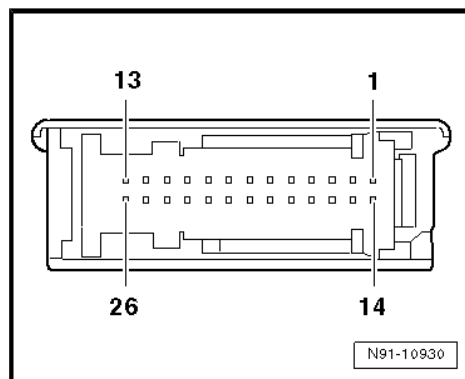
- ❑ Antenna systems. Refer to ➤ [“3 Antenna Systems”, page 18](#) .

## 9 - GPS Antenna - R50- antenna connection

- ❑ GPS
- ❑ Antenna systems. Refer to ➤ [“3 Antenna Systems”, page 18](#) .

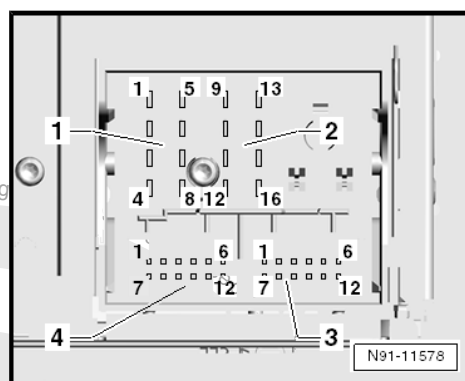
## 26-Pin Multi-Pin Connector, Video and LF Input

- 4 - Video Input RGBS Ground
- 6 - Switch-on signal from Telephone Baseplate - R126-
- 7 - Description of key functions from Telephone Baseplate - R126-
- 8 - Antenna diagnostic to the Telephone Baseplate - R126-
- 9 - Video Input RGBS Ground
- 11 - Video Input Ground
- 12 - Video Input Sync
- 13 - Video Input Green
- 20 - Terminal 30, switched, to Telephone Baseplate - R126-
- 24 - Video Input RGBS Ground
- 25 - Video Input Blue
- 26 - Video Input Red



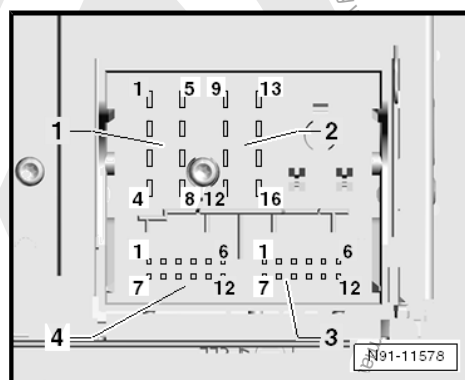
## 8-Pin Multi-Pin Connector 1, Speaker Outputs

- 1 - Right Rear Speaker (+)
- 2 - Right Front Speaker (-)
- 3 - Left Front Speaker (+)
- 4 - Left Rear Speaker (+)
- 5 - Right Rear Speaker (-)
- 6 - Right Front Speaker (-)
- 7 - Left Front Speaker (+)
- 8 - Left Rear Speaker (-)



## 8-Pin Multi-Pin Connector 2, CAN Bus, Power Supply

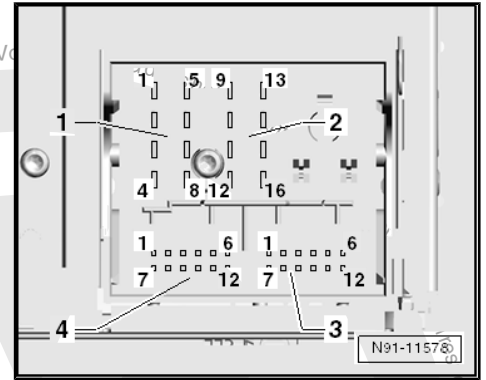
- 9 - CAN Bus High
- 10 - CAN Bus Low
- 12 - Terminal 31
- 15 - Terminal 30
- 16 - Continuous Positive, Connected with PIN 15, Anti-Theft Alarm System





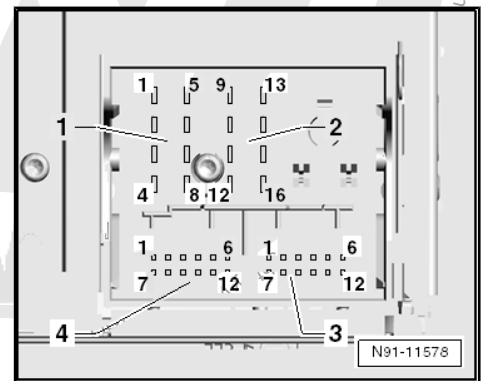
### 12-Pin Multi-Pin Connector 3, Telephone

- 1 - Microphone Input (-)
- 2 - Not Assigned
- 3 - Not Assigned
- 4 - Not Assigned
- 5 - Telephone, Low Frequency Signal Input Left (-)
- 6 - Telephone, Low Frequency Signal Input Right (-)
- 7 - Microphone Input (+)
- 8 - Not Assigned
- 9 - Not Assigned
- 10 - Telephone, Mute
- 11 - Telephone, Low Frequency Signal Input Left (+)
- 12 - Telephone, Low Frequency Signal Input Right (+)



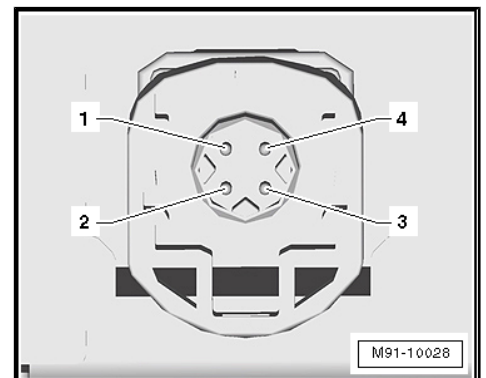
### 12-Pin Multi-Pin Connector 4, Multimedia System Control Module - J650-

- 1 - Left Audio Input Multimedia System Control Module - J650-
- 2 - Audio Input Ground Multimedia System Control Module - J650-
- 3 - Audio Ground, CD
- 4 - Terminal 30, CD
- 5 - Not Assigned
- 6 - CD Data out
- 7 - Right Audio Input Multimedia System Control Module - J650-
- 8 - Audio Left, CD
- 9 - Audio Right, CD
- 10 - Control Signal, CD
- 11 - CD Data in
- 12 - CD CLK



### 4-Pin USB Connection

- 1 - Ground
- 2 - D (-)
- 3 - VCC (+5 V)
- 4 - D (+)



## 6.3.3 Connector Assignments, RNS 510



### 1 - Navigation Connection, Japan

- ☐ Not Assigned

### 2 - Antenna Connection

- ☐ DAB
- ☐ Antenna systems. Refer to  
⇒ ["3 Antenna Systems", page 18](#).

### 3 - 8-Pin Multi-Pin Connector 1, Speaker Outputs

- ☐ Terminal assignment. Refer to ⇒ [page 99](#).

### 4 - 8-Pin Multi-Pin Connector 2, CAN Bus, Voltage Supply

- ☐ Terminal assignment. Refer to ⇒ [page 99](#).

### 5 - 12-Pin Multi-Pin Connector 3, Telephone

- ☐ Terminal assignment. Refer to ⇒ [page 99](#).

### 6 - Multi-Pin Connector 4, 12-Pin, External Audio Source Connection - R199-, Multimedia System Control Module - J650-

- ☐ Terminal assignment. Refer to ⇒ [page 100](#).

### 7 - 26-Pin Multi-Pin Connector 5, Video and LF Input

- ☐ Terminal assignment. Refer to ⇒ [page 100](#).

### 8 - GPS Antenna - R50- Antenna Connection

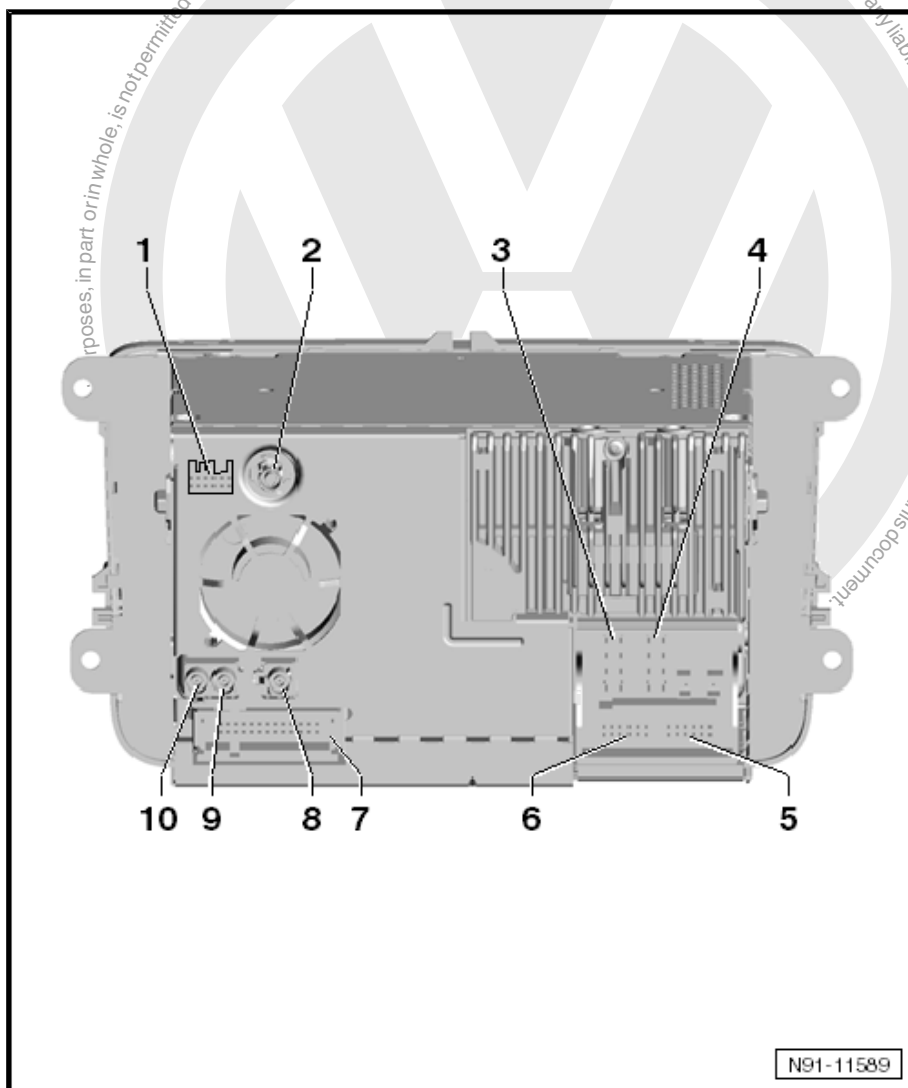
- ☐ GPS
- ☐ Antenna systems. Refer to ⇒ ["3 Antenna Systems", page 18](#).

### 9 - Antenna Connection

- ☐ FM2
- ☐ Antenna systems. Refer to ⇒ ["3 Antenna Systems", page 18](#).

### 10 - Antenna Connection

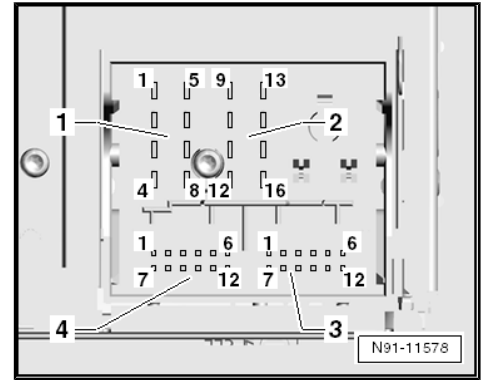
- ☐ AM/FM
- ☐ Antenna systems. Refer to ⇒ ["3 Antenna Systems", page 18](#).





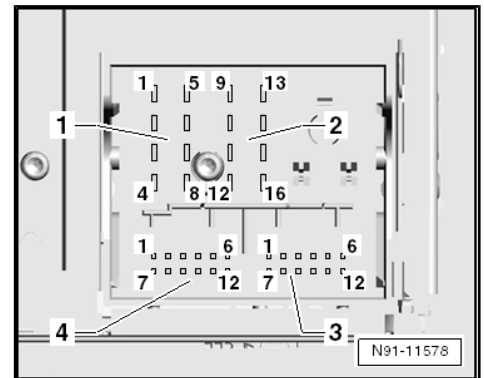
### 8-Pin Multi-Pin Connector 1, Speaker Outputs

- 1 - Right Rear Speaker (+)
- 2 - Right Front Speaker (-)
- 3 - Left Front Speaker (+)
- 4 - Left Rear Speaker (+)
- 5 - Right Rear Speaker (-)
- 6 - Right Front Speaker (-)
- 7 - Left Front Speaker (+)
- 8 - Left Rear Speaker (-)



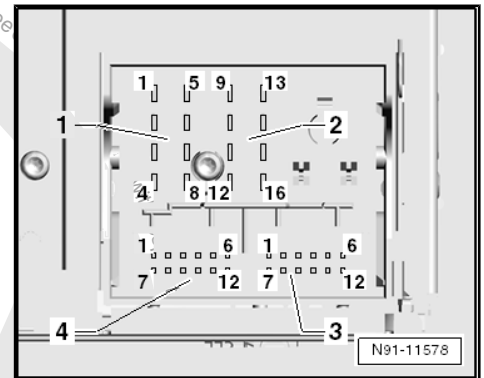
### 8-Pin Multi-Pin Connector 2, CAN Bus, Power Supply

- 9 - CAN Bus High
- 10 - CAN Bus Low
- 12 - Terminal 31
- 15 - Terminal 30
- 16 - Continuous Positive, Connected with PIN 15, Anti-Theft Alarm System



### 12-Pin Multi-Pin Connector 3, Telephone

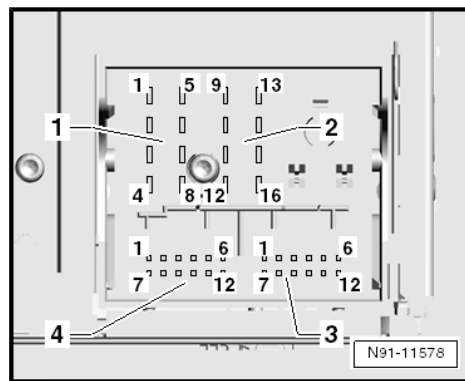
- 1 - Microphone Input (-)
- 2 - Not Assigned
- 3 - Not Assigned
- 4 - Microphone Output (-)
- 5 - Telephone, Low Frequency Signal Input Left (-)
- 6 - Telephone, Low Frequency Signal Input Right (-)
- 7 - Microphone Input (+)
- 8 - Not Assigned
- 9 - Microphone Output (+)
- 10 - Telephone, Mute
- 11 - Telephone, Low Frequency Signal Input Left (+)
- 12 - Telephone, Low Frequency Signal Input Right (+)





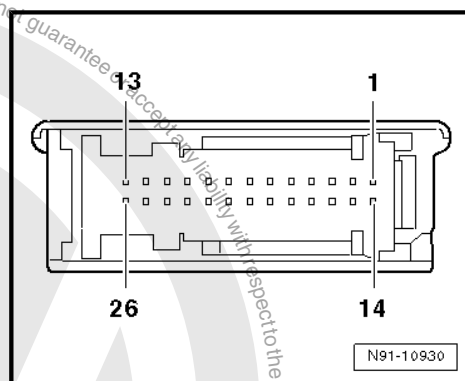
### 12-Pin Multi-Pin Connector 4, External Audio Source Connection - R199- , Multimedia System Control Module - J650-

- 1 - Left Audio Input External Audio Source Connection - R199- / Multimedia System Control Module - J650-
- 2 - Audio Input Ground External Audio Source Connection - R199- / Multimedia System Control Module - J650-
- 3 - Audio Ground, CD
- 4 - Terminal 30, CD
- 5 - Not Assigned
- 6 - CD Data out
- 7 - Right Audio Input External Audio Source Connection - R199- / Multimedia System Control Module - J650-
- 8 - Audio Left, CD
- 9 - Audio Right, CD
- 10 - Control Signal, CD
- 11 - CD Data in
- 12 - CD CLK



### 26-Pin Multi-Pin Connector 5, Video and LF Input

- 4 - Ground Shield
- 5 - Video Output LF Right
- 6 - Video Output Ground
- 7 - Video Output Sync
- 8 - Video Output Green
- 9 - Ground Shield
- 10 - Video Input LF Right
- 11 - Video Input Ground
- 12 - Video Input Sync
- 13 - Video Input Green
- 17 - Video Output LF Ground
- 18 - Video Output LF Left
- 19 - Video Output RGBS (-)
- 20 - Video Output Blue
- 21 - Video Output Red
- 22 - Video Output LF (-)
- 23 - Video Input LF Left
- 24 - Video Input RGBS (-)
- 25 - Video Input Blue
- 26 - Video Input Red







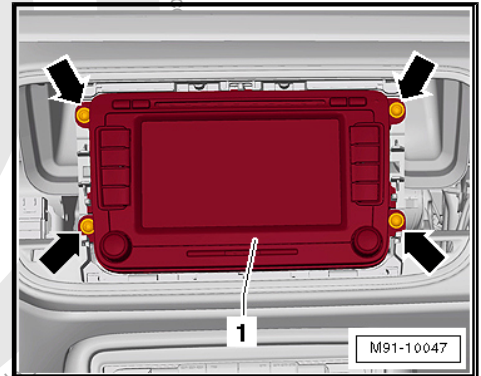
## 6.4 Navigation System Control Module, Removing and Installing

⇒ "6.4.1 Radio/Navigation Display Unit Control Module J503, Removing and Installing", page 101

### 6.4.1 Radio/Navigation Display Unit Control Module - J503- , Removing and Installing

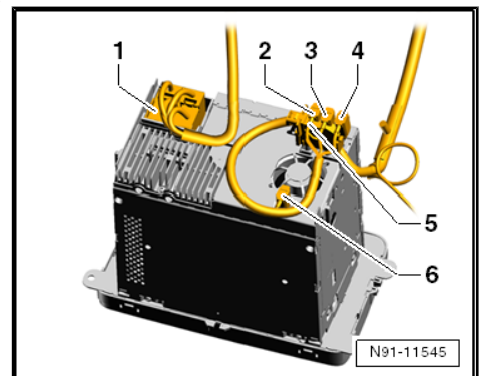
#### Removing

- If there is a CD still in the player, remove it. Refer to the Owner's Manual.
- Turn off the ignition and all electrical equipment and remove the ignition key.
- Remove the instrument panel center trim. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel .
- Remove the screws -arrows- from the Radio/Navigation Display Unit Control Module - J503- -1-.
- Pull the Radio/Navigation Display Unit Control Module - J503- -1- out of the installation slot just far enough until the connectors on the back are accessible.

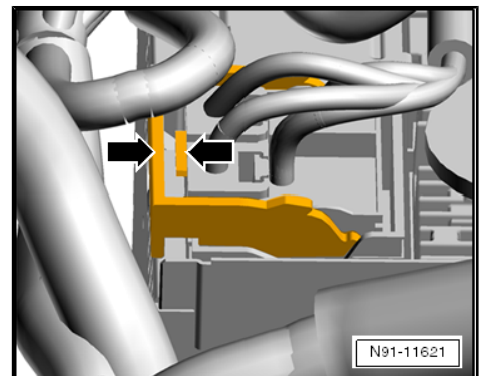


#### Connectors -1 through 6-

- 1 - Multi-Pin Connector, Quad Block
- 2 - Not Assigned
- 3 - Radio Antenna Connector
- 4 - Radio Antenna Connector
- 5 - Video Signals Connector
- 6 - DAB (Digital Audio Broadcasting)/Satellite Tuner Antenna Connector

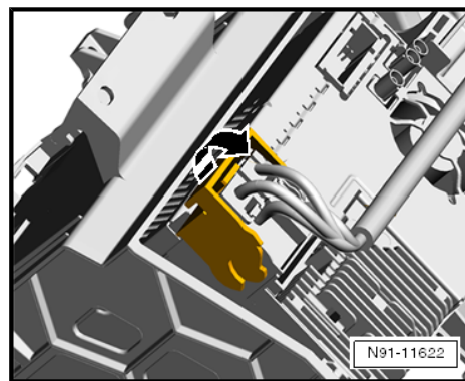


- Squeeze the safety mechanism on the connector -arrows-.

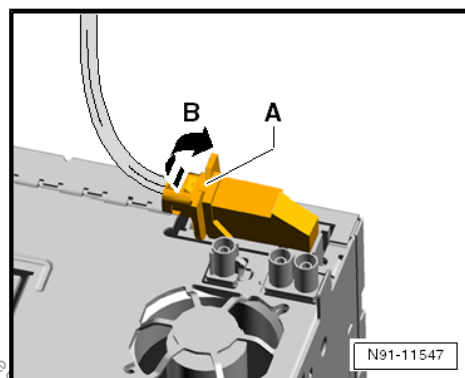




- Move the locking bracket in direction of the -arrow-. The connector will be pushed out at the same time.



- Push the retainer -A- onto the audio/video connector and move the bracket in direction -B-. The connector will be pushed out at the same time.



- Release the safety mechanisms on all the connectors -arrows- and disconnect the connectors.

#### Installing

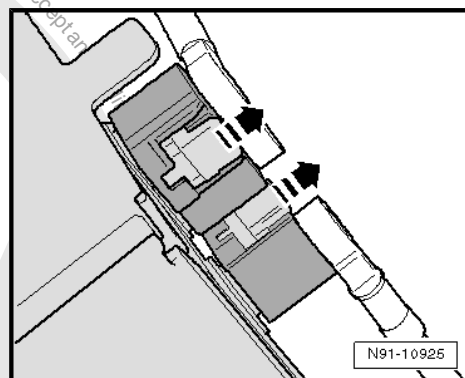
Install in reverse order of removal. Note the following:

Never push on the display or the buttons on the Radio/Navigation Display Unit Control Module - J503- when inserting it, since the Radio/Navigation Display Unit Control Module - J503- may be damaged by doing this.

- Check the coding and code again using the Vehicle Diagnostic Tester .

#### Tightening Specifications

- ◆ Refer to  
⇒ ["6.2 Component Location Overview - Navigation System", page 92](#)



## 6.5 Vehicle Positioning System Control Module, Removing and Installing

The Vehicle Positioning System Control Module - J895- is located behind the left luggage compartment side trim panel.

#### Removing

- Turn off the ignition and all electrical equipment and remove the ignition key.
- Remove the luggage compartment left trim panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Luggage Compartment Trim Panels .



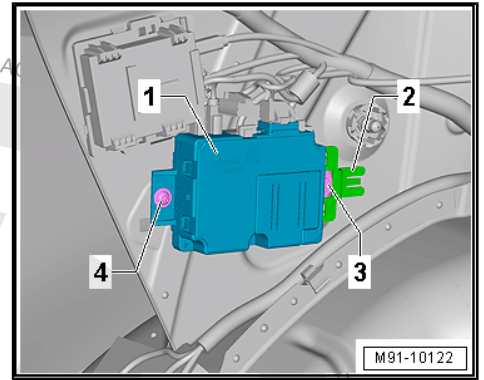
- Remove the screws -3 and 4- and remove the Vehicle Positioning System Control Module - J895- -1- from the bracket -2-.
- Release and disconnect the connectors from the Vehicle Positioning System Control Module - J895- -1-.

### Installing

Install in reverse order of removal.

### Tightening Specifications:

- ◆ Screw -3-: 2.5 Nm
- ◆ Screw -4-: 4 Nm





## 7 Rearview Camera System

⇒ **"7.1 Overview - Rearview Camera System", page 104**

⇒ **"7.2 Component Location Overview - Rearview Camera System", page 104**

⇒ **"7.3 Rearview Camera R189, Removing and Installing", page 105**

### 7.1 Overview - Rearview Camera System

Familiarity with the function and operation of the rearview camera system is needed if there are customer concerns.

#### Function

The rear system assists the driver during driving in reverse by providing the driver with an image of the traffic situation behind the vehicle via the monitor of the radio/navigation system. The system is optional equipment.

The system switches itself on by selecting the reverse gear, even when radio/navigation system is switched off.

The rear view camera system consists of the following components:

- ◆ Rearview Camera - R189-
- ◆ Radio/Navigation Display Unit Control Module - J503-
- ◆ Steering wheel with Steering Angle Sensor - G85-

It is not permitted to install an auxiliary license plate holder for vehicles with rear view camera system because it would impair the function of the rear view camera system. License plate lights may also be impaired.

#### Malfunction Recognition and Malfunction Indicator

The rearview camera system is equipped with OBD.

For troubleshooting, use the Vehicle Diagnostic Tester in the "Guided Fault Finding" function.

Small calibrations are necessary.

### 7.2 Component Location Overview - Rearview Camera System

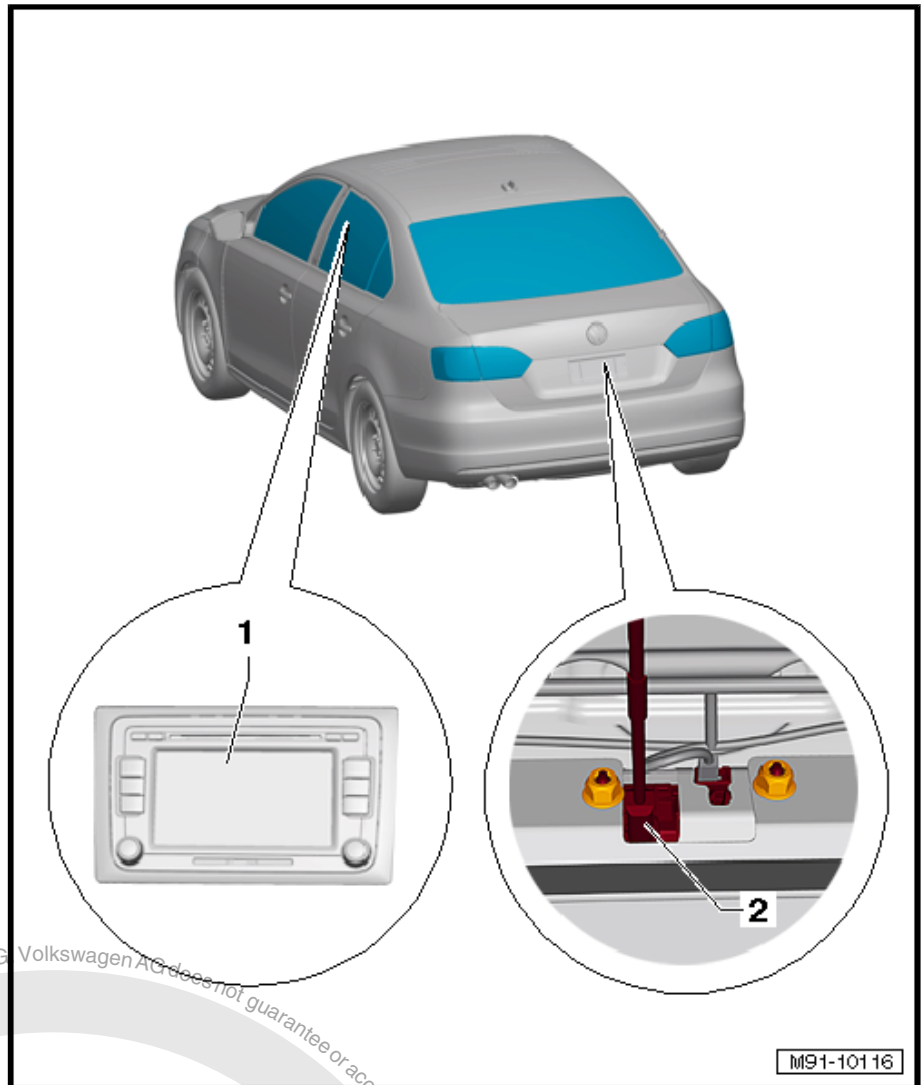


## 1 - Radio/Navigation Display Unit Control Module - J503-

- ❑ Inside the center of the instrument panel
- ❑ Refer to  
⇒ ["6.1.3 Overview - Navigation System, RNS 510", page 90](#) .

## 2 - Rearview Camera - R189-

- ❑ Bolts: 6 Nm
- ❑ In the rear lid handle
- ❑ Removing and Installing. Refer to  
⇒ ["7.3 Rearview Camera R189, Removing and Installing", page 105](#) .



## 7.3 Rearview Camera - R189- , Removing and Installing

### Special tools and workshop equipment required

- ◆ Torque Wrench 1783 - 2-10Nm - VAG1783-

The Rearview Camera - R189- is installed inside the rear lid handle button. The Rearview Camera - R189- cannot be removed from the handle button. The handle button must be replaced.

### Removing

- Turn off the ignition and all electrical equipment and remove the ignition key.
- Remove the rear lid trim panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Luggage Compartment Trim Panels; Rear Lid End Panel Trim Panel, Removing and Installing .
- Open the wire holder from the wiring harness for the Rearview Camera - R189- near the connectors and remove both wires.

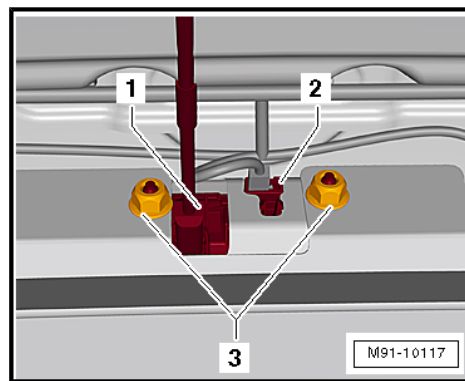


- Disconnect the connectors -1- and -2-.
- Remove the nuts -3-.
- Remove the handle button with the Rearview Camera - R189- -1- from the rear lid.

### Installing

Install in reverse order of removal. Note the following:

- Secure the Rearview Camera - R189- wires to a wire holder again to prevent rattling noises.
- After installing, clean the Rearview Camera - R189- lens with lint-free cloth.



### Tightening Specifications

- ◆ Refer to  
⇒ [“7.2 Component Location Overview - Rearview Camera System”, page 104](#)







## 8 Multifunction Steering Wheel

⇒ [“8.1 Overview - Multifunction Steering Wheel”, page 107](#)

⇒ [“8.2 Overview - Multifunction Steering Wheel”, page 107](#)

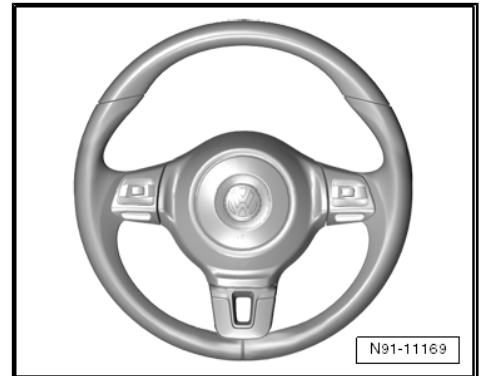
⇒ [“8.3 Left/Right Multifunction Buttons on Steering Wheel E440 / E441 , Removing and Installing”, page 108](#)

⇒ [“8.4 Tiptronic Downshift/Upshift Button on Steering Wheel E439 / E438 , Removing and Installing”, page 109](#)

### 8.1 Overview - Multifunction Steering Wheel

The multifunction steering wheel makes it possible to control some functions of the Communications System and the cruise control system from the steering wheel.

The Multifunction Steering Wheel Control Module - J453- only communicates with the Steering Column Electronics Control Module - J527- . Data commands are processed there once more for further communication.



The multifunction steering wheel is made up of the following components:

- ◆ Left Multifunction Buttons on Steering Wheel - E440- with integrated Multifunction Steering Wheel Control Module - J453- .
- ◆ Right Multifunction Buttons on Steering Wheel - E441-

The multifunction steering wheel is equipped with OBD.

For troubleshooting, use the Vehicle Diagnostic Tester in the “Guided Fault Finding” function.



### 8.2 Overview - Multifunction Steering Wheel



#### 1 - Tiptronic Downshift Button on Steering Wheel - E439-

- ❑ Removing and Installing. Refer to  
⇒ ["8.4 Tiptronic Downshift/Upshift Button on Steering Wheel E439 / E438 , Removing and Installing", page 109](#) .

#### 2 - 3-Spoke Steering Wheel

#### 3 - Tiptronic Upshift Button on Steering Wheel - E438-

- ❑ Removing and Installing. Refer to  
⇒ ["8.4 Tiptronic Downshift/Upshift Button on Steering Wheel E439 / E438 , Removing and Installing", page 109](#) .

#### 4 - Bolt

- ❑ 1.2 Nm

#### 5 - Bolt

- ❑ 1.2 Nm

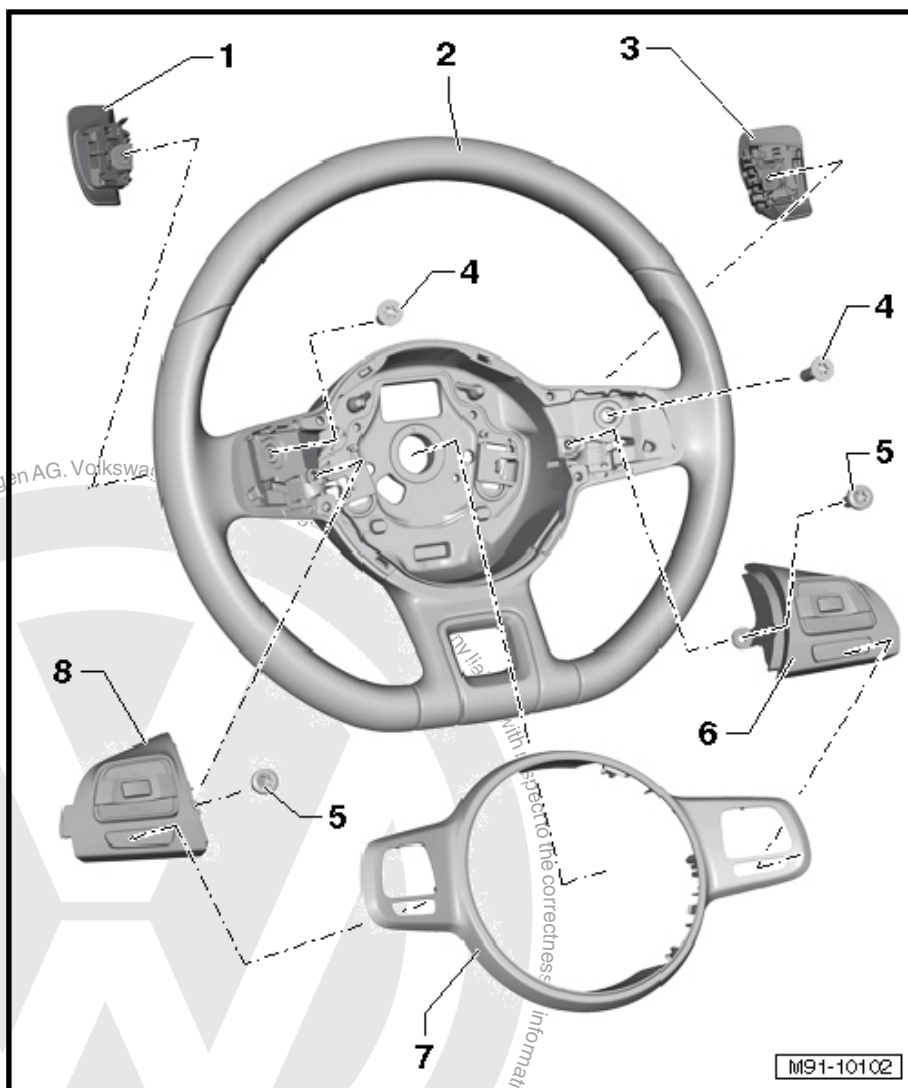
#### 6 - Right Multifunction Buttons On Steering Wheel - E441-

- ❑ Removing and Installing. Refer to  
⇒ ["8.3 Left/Right Multifunction Buttons on Steering Wheel E440 / E441 , Removing and Installing", page 108](#) .

#### 7 - Decorative Trim

#### 8 - Left Multifunction Buttons On Steering Wheel - E440-

- ❑ Removing and Installing. Refer to  
⇒ ["8.3 Left/Right Multifunction Buttons on Steering Wheel E440 / E441 , Removing and Installing", page 108](#) .



### 8.3 Left/Right Multifunction Buttons on Steering Wheel -E440- / -E441- , Removing and Installing

The removal and installation of the Left Multifunction Buttons on Steering Wheel - E440- / Right Multifunction Buttons on Steering Wheel - E441- is identical.

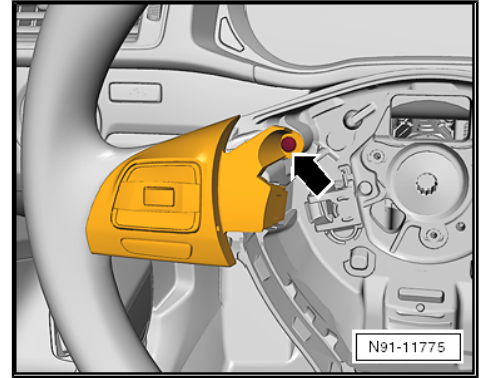
#### Removing

- Remove the driver side airbag. Refer to ⇒ Body Interior; Rep. Gr. 69 ; Driver Side Airbag; Airbag Unit with Driver Airbag Igniter - N95- , Removing and Installing .





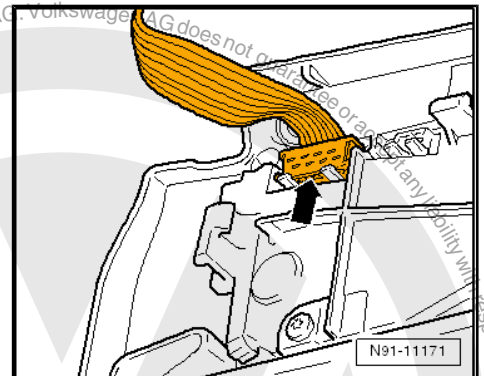
- Remove the bolt -arrow-.
- Remove the Left Multifunction Buttons on Steering Wheel - E440- .



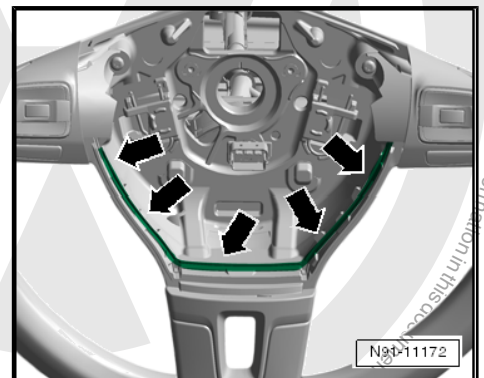
- Release and disconnect the connector -arrow- from the Left Multifunction Buttons on Steering Wheel - E440- .

### Installing

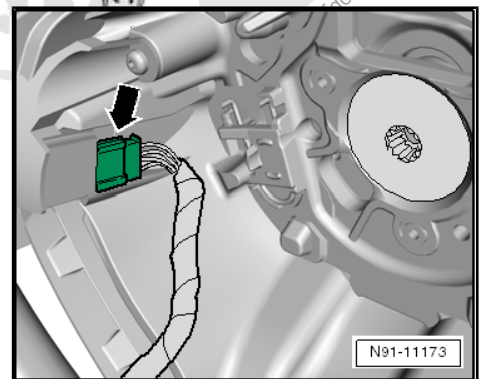
Install in reverse order of removal. Note the following:



- Make sure to route the wires between both blocks of buttons as illustrated -arrows-.



- Make sure the black connector is connected to the left block of buttons -arrow-.
- Code the Steering Column Electronics Control Module - J527- using the Vehicle Diagnostic Tester .



### Tightening Specifications

- ◆ Refer to  
⇒ ["8.2 Overview - Multifunction Steering Wheel", page 107](#)

## 8.4 Tiptronic Downshift/Upshift Button on Steering Wheel -E439- / -E438- , Removing and Installing

- Turn off the ignition and all electrical equipment and remove the ignition key.



## Removing

- Remove the multifunction buttons. Refer to  
⇒ [“8.3 Left/Right Multifunction Buttons on Steering Wheel E440 / E441 , Removing and Installing”, page 108](#) .
- Remove the bolt -3- from the steering wheel -1-.
- Release and disconnect the connector -2-.
- Remove the tiptronic switch toward the rear.

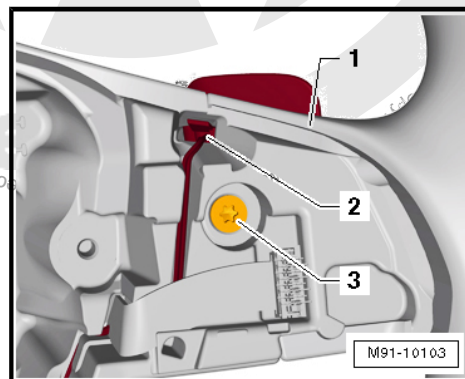
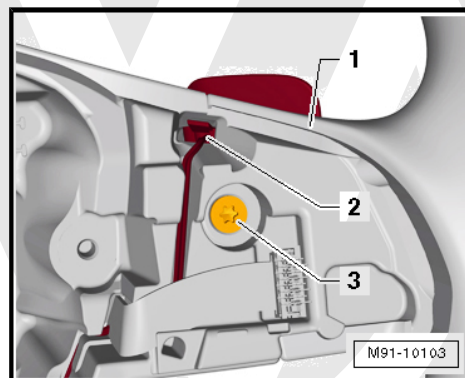
## Installing

Install in reverse order of removal. Note the following:

- Pay attention to the location of the connecting cable -2- to the multifunction button.

## Tightening Specifications

- ◆ Refer to  
⇒ [“8.2 Overview - Multifunction Steering Wheel”, page 107](#)





## 9 Connection for External Multimedia Devices

⇒ [“9.1 Overview - Connection for External Multimedia Devices”, page 111](#)

⇒ [“9.2 External Audio Source Connection Connectors”, page 117](#)

⇒ [“9.3 External Audio Source Connection R199 , Removing and Installing”, page 121](#)

### 9.1 Overview - Connection for External Multimedia Devices

⇒ [“9.1.1 Overview - External Audio Source Connection R199 , AUX IN”, page 111](#)

⇒ [“9.1.2 Overview - Multimedia System Control Module J650 ”, page 113](#)

⇒ [“9.1.3 Overview - External Audio Source Connection 2 R231 , USB Port”, page 115](#)

⇒ [“9.1.4 Overview - Multimedia System Control Module J650 , UMI”, page 115](#)

#### 9.1.1 Overview - External Audio Source Connection - R199- AUX IN

The External Audio Source Connection - R199- works with the radio/RNS that has an “AUX”.

The audio signals from an MP3 player or a portable CD/cassette player can be played in the radio/RNS using an adapter cable connected to the External Audio Source Connection - R199- . These will then be transmitted through the sound system.

Refer to the Owner's Manual for further information.



**1 - Sound System**

**2 - Radio/RNS**

**3 - Multifunction Steering Wheel**

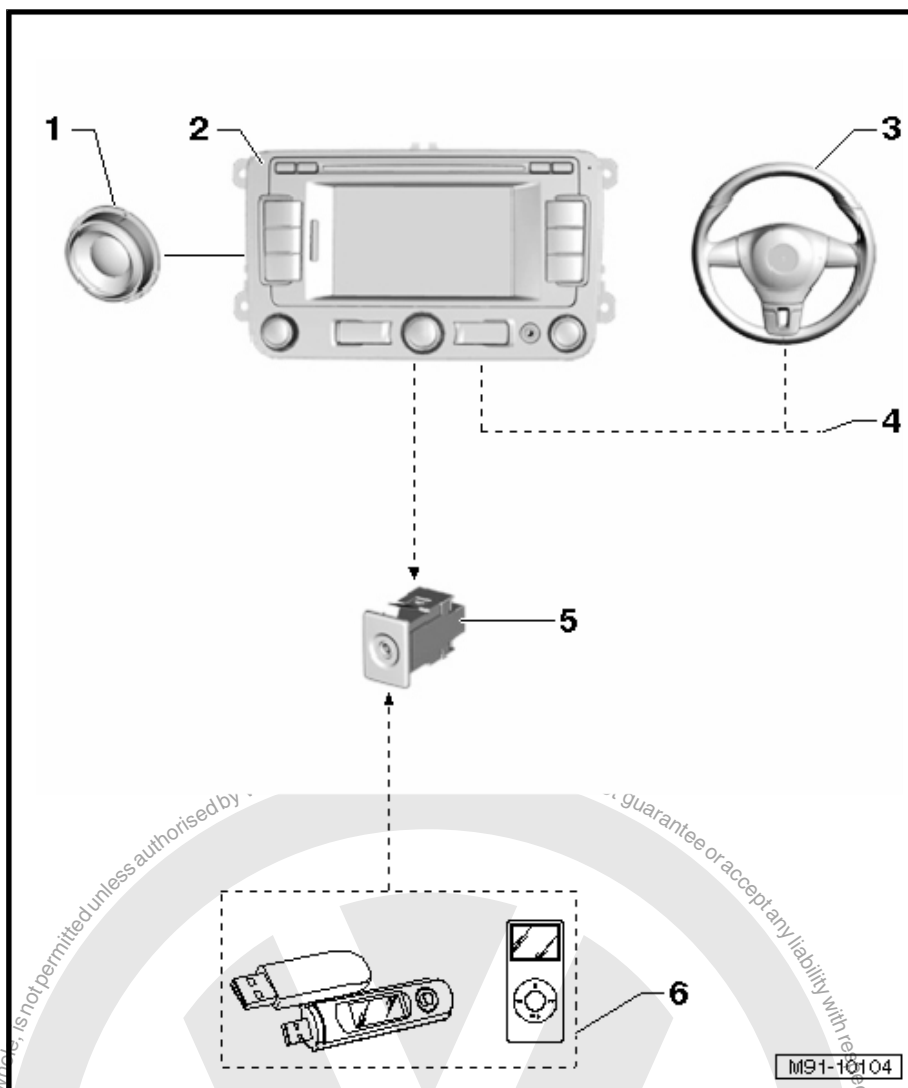
**4 - CAN Bus**

**5 - External Audio Source Connection - R199-**

- ☐ Connector Assignment. Refer to  
⇒ ["9.2.1 External Audio Source Connection R199 Connector, AUX IN", page 117](#) .
- ☐ Removing and Installing. Refer to  
⇒ ["9.3 External Audio Source Connection R199, Removing and Installing", page 121](#) .

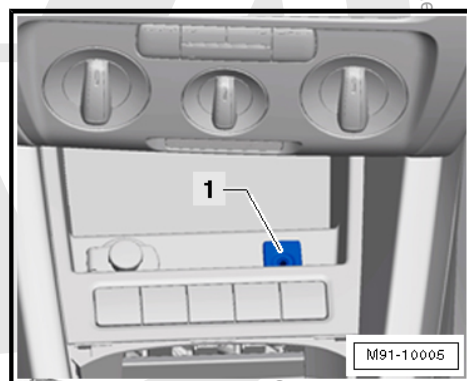
**6 - Input Devices**

- ☐ MP3 player
- ☐ iPod
- ☐ CD and cassette player



**External Audio Source Connection - R199- Component Location**

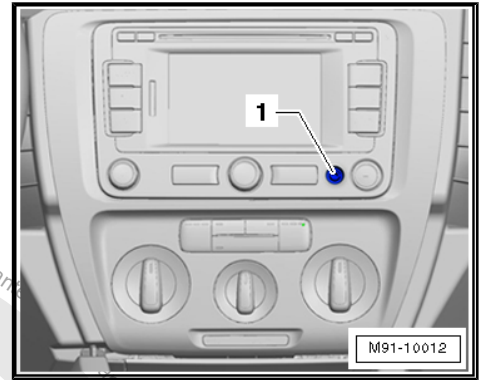
The External Audio Source Connection - R199- -1- is installed inside the center console storage compartment.





### External Audio Source Connection - R199- for RNS 315 Component Location

The External Audio Source Connection - R199- -1- is integrated in the unit. It is located on the right side of the front trim at the bottom.



### 9.1.2 Overview - Multimedia System Control Module - J650-



#### Note

- ◆ Analog audio (AUX IN input) and digital audio (USB or iPod input) can be played on the radio/RNS via the Multimedia System Control Module - J650-. Devices that are connected digitally can be operated through the radio/RNS. ID3 tags and titles are also displayed in the radio/RNS display.
- ◆ The Multimedia System Control Module - J650- has USB and iPod connections that can be used for audio input (AUX IN). A specific adapter cable is used to connect the mobile device to the USB or iPod interface on the Multimedia System Control Module - J650-.
- ◆ Refer to the Owner's Manual for further information.



## 1 - Sound System

### 2 - Radio/RNS

### 3 - Multifunction Steering Wheel

### 4 - CAN Bus

### 5 - LF Wire

- ☐ External Audio Source Connection - R199-

### 6 - External Audio Source Connection - R199-

- ☐ Connector Assignment. Refer to  
⇒ ["9.2.1 External Audio Source Connection R199 Connector, AUX IN", page 117](#) .
- ☐ Removing and Installing. Refer to  
⇒ ["9.3.1 External Audio Source Connection R199 Removing and Installing, Center Console Storage Compartment", page 121](#) .

### 7 - Adapter Wire

- ☐ One for each device being connected

### 8 - Input Devices

- ☐ MP3 player
- ☐ Memory sticks
- ☐ iPod®

### 9 - Multimedia System Control Module - J650-

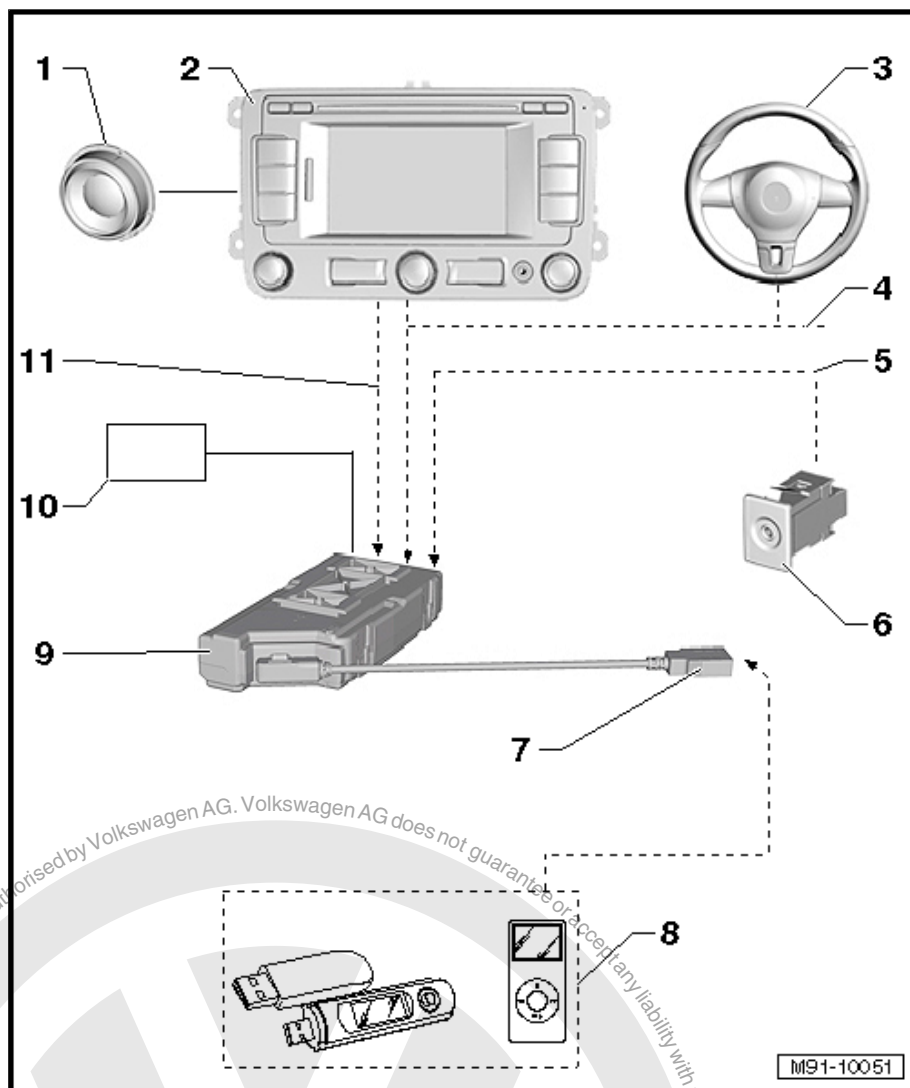
- ☐ Different component locations (in the glove compartment. Refer to ⇒ [page 115](#) or in the center console. Refer to ⇒ [page 115](#) )
- ☐ Connector Assignment. Refer to  
⇒ ["9.2.3 Multimedia System Control Module J650 Connector", page 118](#) .
- ☐ Removing and Installing, Control Module on Glove Compartment. Refer to  
⇒ ["9.3.3 Multimedia System Control Module J650 , Removing and Installing, Control Module on Glove Compartment", page 123](#) .
- ☐ Removing and Installing, Control Module in Center Console. Refer to  
⇒ ["9.3.4 Multimedia System Control Module J650 , Removing and Installing, Control Module in Center Console", page 124](#)

### 10 - Power Supply

- ☐ Terminal 30/31

### 11 - LF Wire

- ☐ Multimedia System Control Module - J650- to the radio/RNS







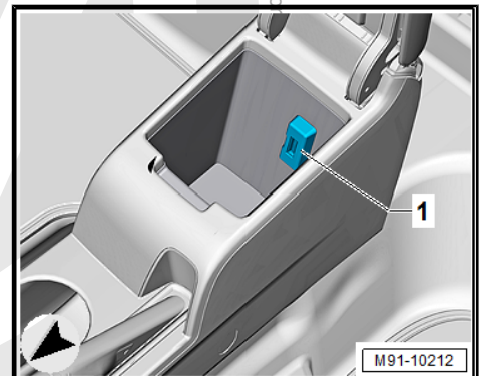
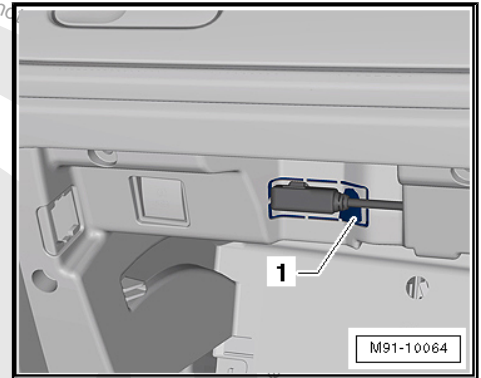
### Multimedia System Control Module - J650- component location, on glove compartment

The Multimedia System Control Module - J650- -1- is installed inside the glove compartment.



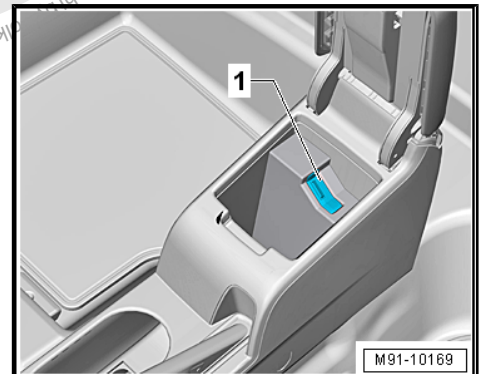
#### Note

*On some vehicles, the Multimedia System Control Module - J650- is installed on the glove compartment, but the connection -1- for the device-specific adapter cable was routed in the storage compartment under the center armrest in the center console.*



### Multimedia System Control Module - J650- component location in the center console

The Multimedia System Control Module - J650- -1- is installed in the center console.

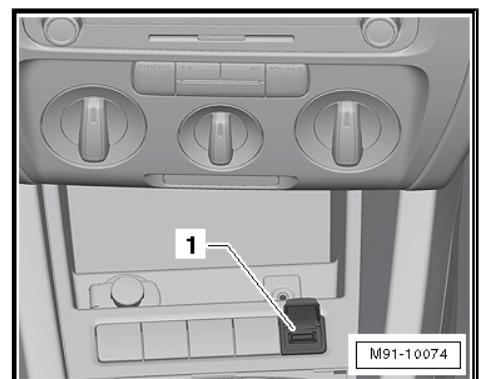


### 9.1.3 Overview - External Audio Source Connection 2 - R231- , USB Port

Component location: External Audio Source Connection 2 - R231- -1-

The External Audio Source Connection 2 - R231- (USB port) -1- is installed in the center console storage compartment.

Refer to the Owner's Manual for further information.



### 9.1.4 Overview - Multimedia System Control Module - J650- , UMI

The UHV High and the MDI are housed together near the UMI, Universal Media Interface. The Cellular Telephone - R54- is connected via Bluetooth.

The functions of the UHV High and MDI are combined in one device.



## 1 - Speaker System

## 2 - Radio/Navigation Display Unit Control Module - J503-

## 3 - Multifunction Steering Wheel

## 4 - CAN Bus

## 5 - Telephone Microphone - R38-

## 6 - Adapter Wire

- ❑ One for each device being connected

## 7 - Cellular Telephone - R54-

## 8 - Bluetooth Connection

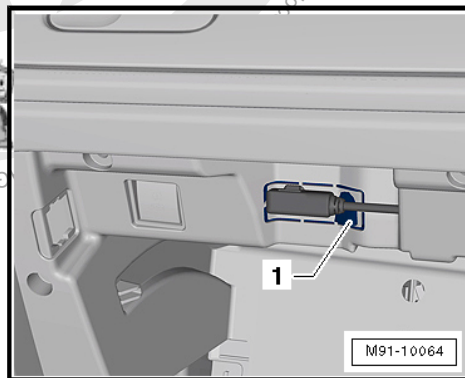
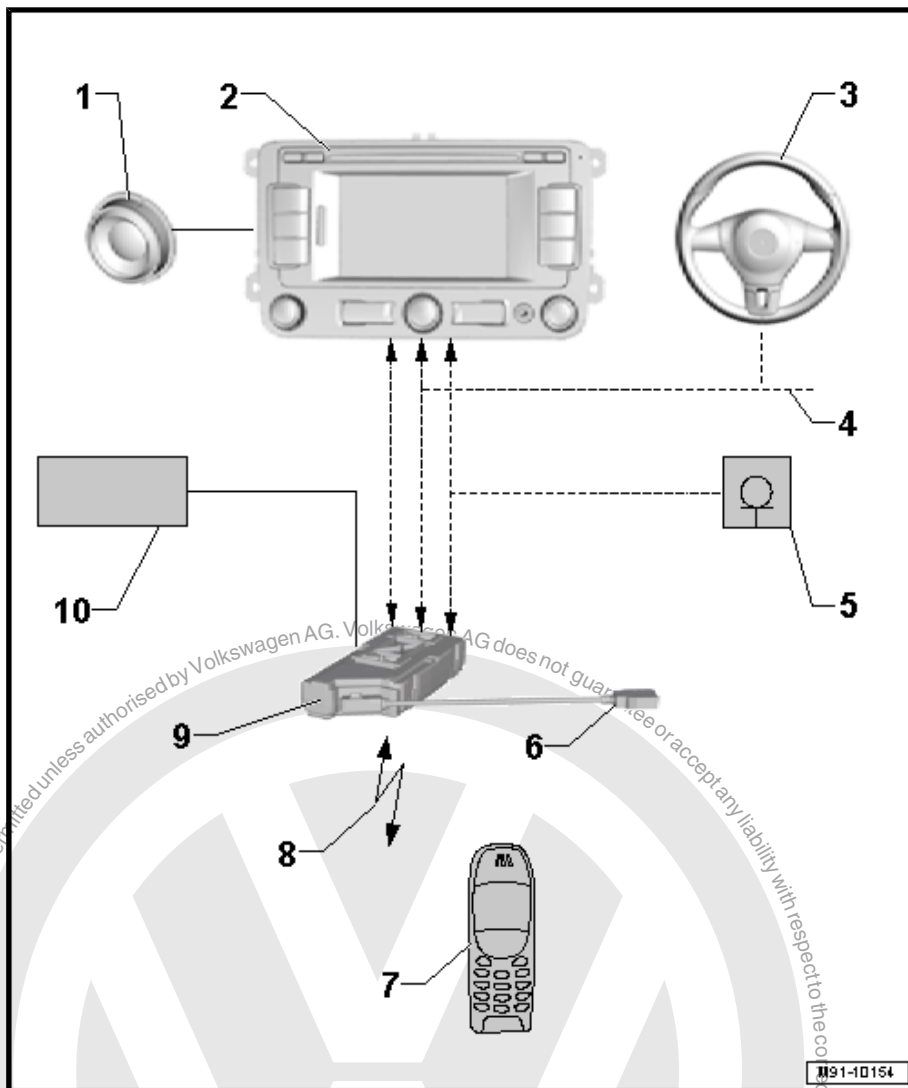
## 9 - Multimedia System Control Module - J650- , UMI

- ❑ Different component locations (in the glove compartment. Refer to [⇒ page 116](#) or in the center console. Refer to [⇒ page 117](#) )
- ❑ Connector Assignment. Refer to [⇒ "9.2.4 Multimedia System Control Module J650 Connector Assignments, UMI", page 119](#) .
- ❑ UMI Control Module on Glove Compartment, Removing and Installing. Refer to [⇒ "9.3.5 Multimedia System Control Module J650 , Removing and Installing, UMI Control Module on the Glove Compartment", page 125](#) .
- ❑ UMI Control Module in Center Console, Removing and Installing. Refer to [⇒ "9.3.6 Multimedia System Control Module J650 , Removing and Installing, UMI Control Module in the Center Console", page 126](#) .

## 10 - Multi-pin Connector, 54-pin

### Component Location UMI, UMI-Control Module in the Glove Compartment

The Multimedia System Control Module - J650- -1- is installed inside the glove compartment.

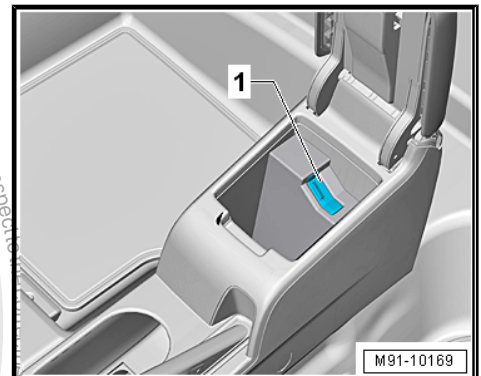
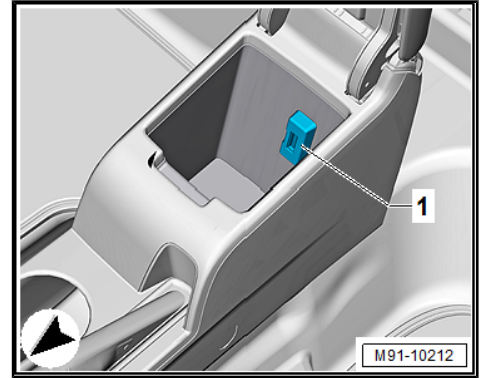






## Note

*On some vehicles, the Multimedia System Control Module - J650- is installed on the glove compartment, but the connection -1- for the device-specific adapter cable was routed in the storage compartment under the center armrest in the center console.*



## UMI Component Location, UMI Control Module in the Center Console

The Multimedia System Control Module - J650- -1- is installed in the center console.

## 9.2 External Audio Source Connection Connectors

⇒ ["9.2.1 External Audio Source Connection R199 Connector, AUX IN", page 117](#)

⇒ ["9.2.2 External Audio Source Connection 2 R231 Connector, USB Port", page 118](#)

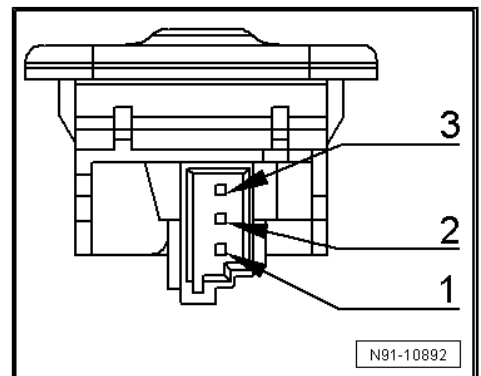
⇒ ["9.2.3 Multimedia System Control Module J650 Connector", page 118](#)

⇒ ["9.2.4 Multimedia System Control Module J650 Connector Assignments, UMI", page 119](#)

### 9.2.1 External Audio Source Connection - R199- Connector, AUX IN

#### 3-Pin Multi-Pin Connector

- 1 - Right Audio Signal
- 2 - Audio Ground
- 3 - Left Audio Signal



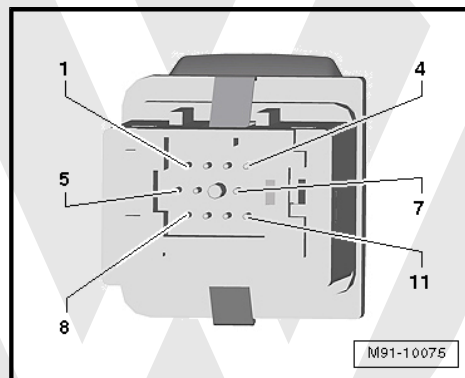


## 9.2.2 External Audio Source Connection 2 - R231- Connector, USB Port

There are two versions: 11- and 4-pin.

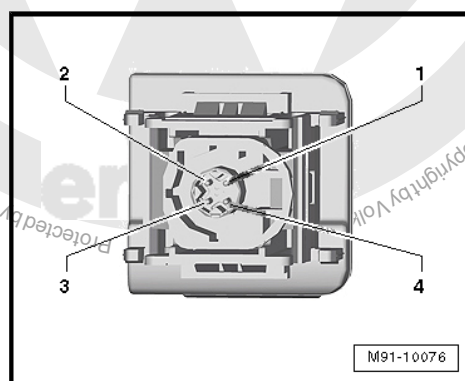
### Multi-Pin Connector, 11-Pin

- 1 - VCC (+5 V)
- 2 - D (+)
- 3 - D (-)
- 4 - Ground
- 5 - Ground Shielding



### 4-Pin Multi-Pin Connector

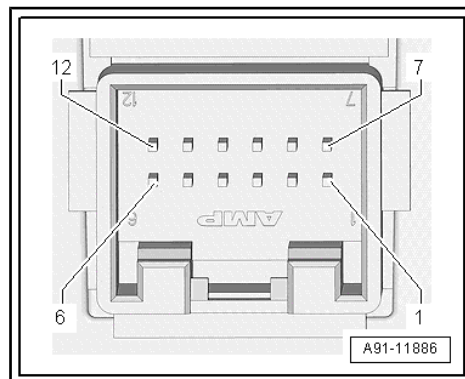
- 1 - D (+)
- 2 - VCC (+5 V)
- 3 - D (-)
- 4 - Ground



## 9.2.3 Multimedia System Control Module - J650- Connector

### 12-Pin Multi-Pin Connector

- 1 - Terminal 31
- 2 - CAN Bus Low
- 3 - Not Assigned
- 4 - Right Audio Signal to the radio/RNS
- 5 - Left Audio Signal from External Audio Source Connection - R199-
- 6 - Right Audio Signal from the External Audio Source Connection - R199-
- 7 - Terminal 30
- 8 - CAN Bus High
- 9 - Left Audio Signal to the Radio/RNS
- 10 - Audio Ground to the Radio/RNS
- 11 - Audio Ground from the External Audio Source Connection - R199-
- 12 - Audio ground shielding, terminal 31

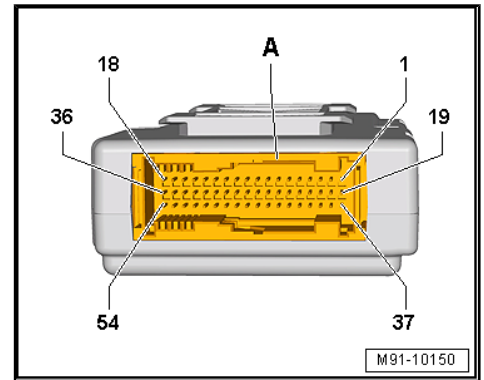




## 9.2.4 Multimedia System Control Module - J650- Connector Assignments, UMI

UMI

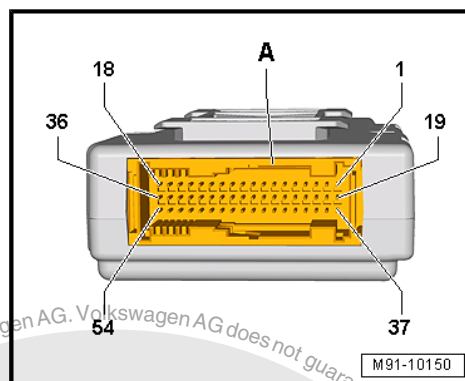
A - Multi-pin connector, 54-pin





## A - Multi-Pin Connector, 54-Pin

- 1 - Terminal 30
- 2 - Terminal 31
- 3 - Switch-On Signal
- 4 - Tel-LF (+) left to Radio - R-
- 5 - Tel-LF (-) left to Radio - R-
- 6 - LF (+) from Control Module for Emergency Call Module and Communication Unit - J949-
- 7 - LF (-) from Control Module for Emergency Call Module and Communication Unit - J949-
- 8 - Tel-LF (+) right to Radio - R-
- 9 - Tel-LF (-) right to Radio - R-
- 10 - Not Assigned
- 11 - Telephone Microphone - R38- (+) from RNS
- 12 - Telephone Microphone - R38- (-) from RNS
- 13 - Not Assigned
- 14 - Not Assigned
- 15 - Not Assigned
- 16 - Not Assigned
- 17 - CAN Bus High
- 18 - CAN Bus Low
- 19 - Not Assigned
- 20 - Not Assigned
- 21 - Not Assigned
- 22 - LF (+) right to Radio - R- , MDI
- 23 - LF (+) left to Radio - R- , MDI
- 24 - LF ground to the Radio - R- , MDI
- 25 - Not Assigned
- 26 - Not Assigned
- 27 - Not Assigned
- 28 - Not Assigned
- 29 - Not Assigned
- 30 - Cellular Telephone Preparation Control Head - E508-
- 31 - Cellular Telephone Preparation Control Head - E508-
- 32 - Not Assigned
- 33 - Left audio signal from External Audio Source Connection - R199- , AUX IN
- 34 - Right audio signal from External Audio Source Connection - R199- , AUX IN
- 35 - Audio ground from External Audio Source Connection - R199- , AUX IN
- 36 - Audio ground shielding from External Audio Source Connection - R199- , AUX IN





- 37 - Not Assigned
- 38 - Terminal 30 to Telephone Baseplate - R126-
- 39 - Not Assigned
- 40 - DIAG signal from Telephone Baseplate - R126-
- 41 - Not Assigned
- 42 - Not Assigned
- 43 - Not Assigned
- 44 - Not Assigned
- 45 - Not Assigned
- 46 - Not Assigned
- 47 - Wake UP to Telephone Baseplate - R126-
- 48 - DIAG signal from Telephone Baseplate - R126-
- 49 through 54 - Not Assigned

### 9.3 External Audio Source Connection - R199- , Removing and Installing

⇒ ["9.3.1 External Audio Source Connection R199 Removing and Installing, Center Console Storage Compartment", page 121](#)

⇒ ["9.3.2 External Audio Source Connection 2 R231 , Removing and Installing, USB Port", page 122](#)

⇒ ["9.3.3 Multimedia System Control Module J650 , Removing and Installing, Control Module on Glove Compartment", page 123](#)

⇒ ["9.3.4 Multimedia System Control Module J650 , Removing and Installing, Control Module in Center Console", page 124](#)

⇒ ["9.3.5 Multimedia System Control Module J650 , Removing and Installing, UMI Control Module on the Glove Compartment", page 125](#)

⇒ ["9.3.6 Multimedia System Control Module J650 , Removing and Installing, UMI Control Module in the Center Console", page 126](#)

⇒ ["9.3.7 Connection for Device-Specific Adapter Cable, Removing and Installing", page 128](#)

#### 9.3.1 External Audio Source Connection - R199- Removing and Installing, Center Console Storage Compartment

Special tools and workshop equipment required

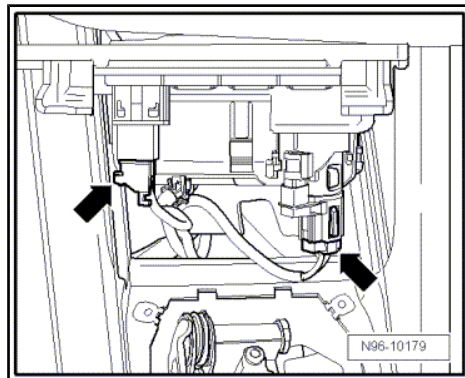
- ◆ Trim Removal Wedge - 3409-

##### Removing

- Switch off the ignition and all electrical consumers and remove the ignition key.
- Remove the front center console storage compartment . Refer to ⇒ Body Interior; Rep. Gr. 68 ; Center Console .



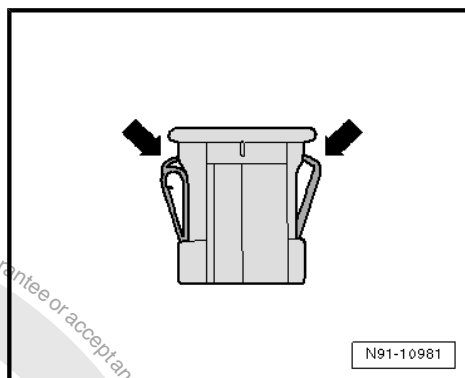
- Release and disconnect the connectors -arrows-.



- Squeeze the clips -arrows- on the External Audio Source Connection - R199- together using the Trim Removal Wedge - 3409- and remove the External Audio Source Connection - R199- .

#### Installing

Install in reverse order of removal.



### 9.3.2 External Audio Source Connection 2 - R231- , Removing and Installing, USB Port

#### Special tools and workshop equipment required

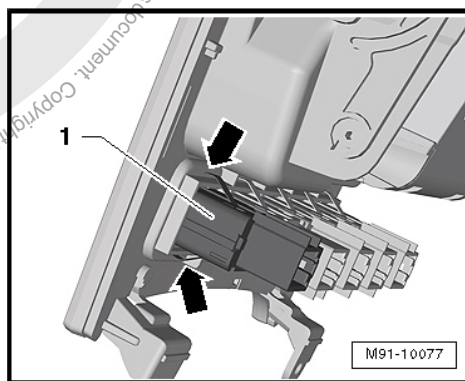
- ◆ Trim Removal Wedge - 3409-

#### Removing

- Switch off the ignition and all electrical consumers and remove the ignition key.
- Disconnect any devices connected to the External Audio Source Connection 2 - R231- .
- Remove the front center console storage compartment . Refer to ⇒ Body Interior; Rep. Gr. 68 ; Center Console .
- Squeeze the clips -arrows- on the USB port -1- together using the Trim Removal Wedge - 3409- and remove the USB port -1-.

#### Installing

Install in reverse order of removal.

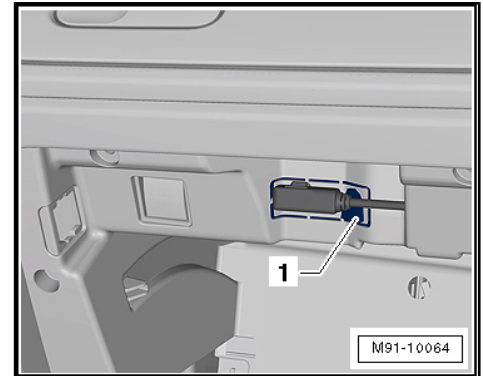






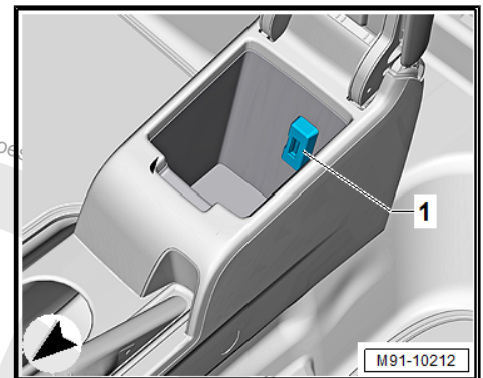
### 9.3.3 Multimedia System Control Module - J650- , Removing and Installing, Control Module on Glove Compartment

The Multimedia System Control Module - J650- -1- is attached to the glove compartment.



#### Note

- ◆ On some vehicles, the Multimedia System Control Module - J650- is installed on the glove compartment, but the connection -1- for the device-specific adapter cable was routed in the storage compartment under the center armrest in the center console.
- ◆ If the connection -1- for the device-specific adapter cable corresponds to the image shown, then the Multimedia System Control Module - J650- is installed on the glove compartment. Refer to Multimedia System Control Module - J650- , Removing. Refer to ⇒ [page 123](#) .
- ◆ Connection -1- for Device-Specific Adapter Cable, Removing and Installing. Refer to ⇒ ["9.3.7 Connection for Device-Specific Adapter Cable, Removing and Installing", page 128](#)



#### Removing

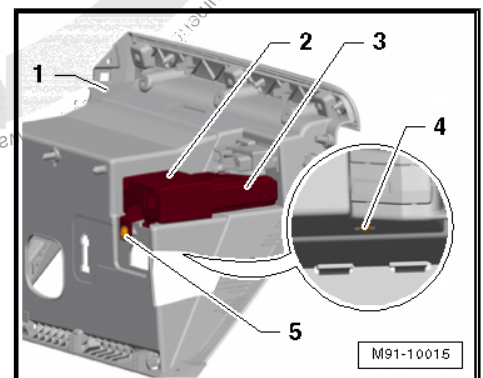
- Switch off the ignition and all electrical equipment and remove the ignition key.
- Remove any devices connected to the Multimedia System Control Module - J650- .
- Remove the glove compartment. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments/Covers; Overview - Glove Compartment .
- Remove the screw -5- on the connector -2-.
- Remove the screw -4- from the inside.
- Push the Multimedia System Control Module - J650- -3- with the connector -2- off of the glove compartment -1- toward the rear.
- Release and disconnect the connector -2- from the Multimedia System Control Module - J650- -3-.

#### Installing

Install in reverse order of removal.

#### Tightening Specifications

- ◆ Refer to ⇒ ["4.3 Overview - Radio", page 44](#)





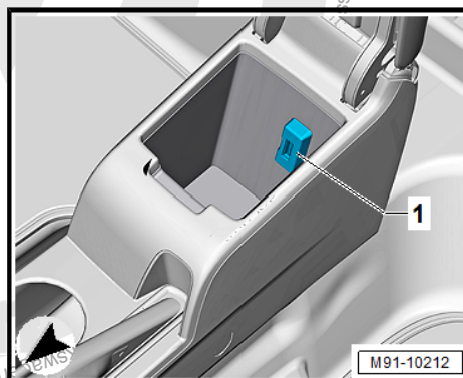
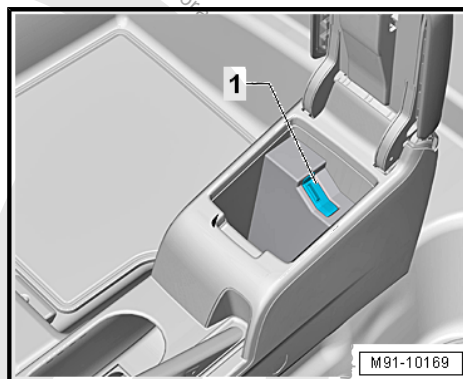
### 9.3.4 Multimedia System Control Module - J650- , Removing and Installing, Control Module in Center Console

The Multimedia System Control Module - J650- -1- is installed in the center console.



#### Note

- ◆ On some vehicles, the Multimedia System Control Module - J650- is installed on the glove compartment, but the connection -1- for the device-specific adapter cable was routed in the storage compartment under the center armrest in the center console.
- ◆ Therefore a visual inspection of the connection -1- for the device-specific adapter cable must be performed in the storage compartment under the center armrest.
- ◆ If the connection -1- for the device-specific adapter cable corresponds to the image shown, then the Multimedia System Control Module - J650- is installed on the glove compartment. Refer to Multimedia System Control Module - J650- , Removing. Refer to ⇒ [page 123](#) .
- ◆ Connection -1- for Device-Specific Adapter Cable, Removing and Installing. Refer to ⇒ ["9.3.7 Connection for Device-Specific Adapter Cable, Removing and Installing", page 128](#)



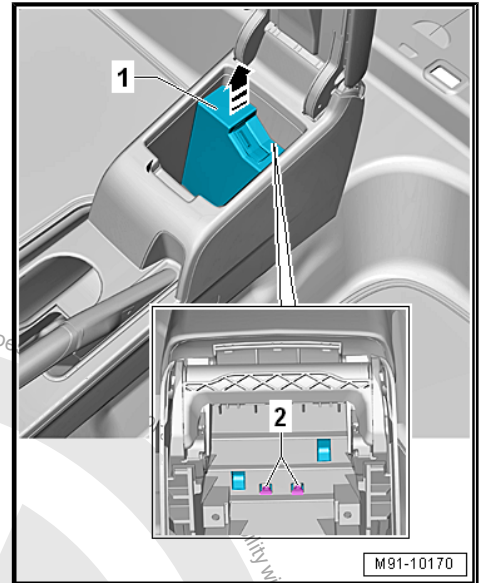
#### Removing

- Switch off the ignition and all electrical equipment and remove the ignition key.
- Remove any devices connected to the Multimedia System Control Module - J650- .
- Remove the rear center console trim. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Center Console; Rear Center Console Trim »Comfort and Highline«, Removing and Installing .





- Release the catches -2- on the bracket for the Multimedia System Control Module - J650- -1-.
- Pull the Multimedia System Control Module - J650- -1- with the bracket and trim upward from the center console -arrow-, until the connector is accessible.
- Release and disconnect the connector from the Multimedia System Control Module - J650- .



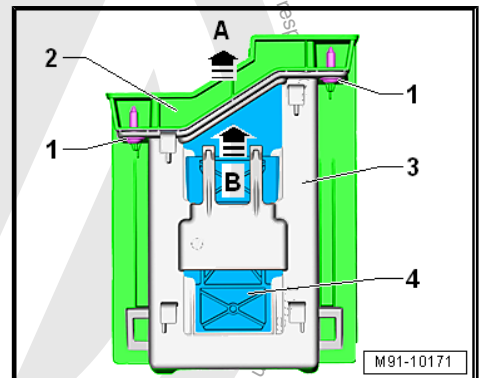
- Remove the screws -1-.
- Remove the trim -2- in the direction of -arrow A- from the bracket -3-.
- Remove the Multimedia System Control Module - J650- -4- in the direction of the -arrow B- from the bracket -3-.

#### Installing

Install in reverse order of removal.

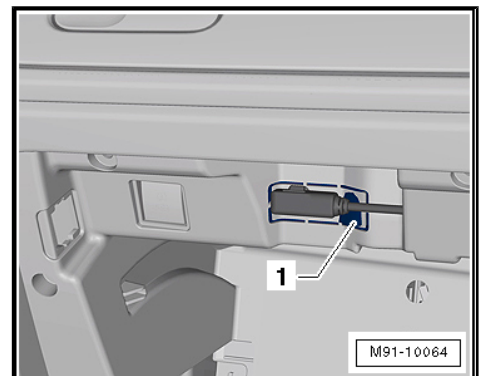
#### Tightening Specifications

Component	Tightening Specification
Screw for trim to bracket	2 Nm



### 9.3.5 Multimedia System Control Module - J650- , Removing and Installing, UMI Control Module on the Glove Compartment

The Multimedia System Control Module - J650- -1- is attached to the glove compartment.





## Note

- ◆ On some vehicles, the Multimedia System Control Module - J650- is installed on the glove compartment, but the connection -1- for the device-specific adapter cable was routed in the storage compartment under the center armrest in the center console.
- ◆ If the connection -1- for the device-specific adapter cable corresponds to the image shown, then the Multimedia System Control Module - J650- is installed on the glove compartment. Refer to Multimedia System Control Module - J650- , Removing. Refer to ➔ [page 126](#).
- ◆ Connection -1- for Device-Specific Adapter Cable, Removing and Installing. Refer to ➔ ["9.3.7 Connection for Device-Specific Adapter Cable, Removing and Installing", page 128](#)

## Removing

- Switch off the ignition and all electrical equipment and remove the ignition key.
- Remove any devices connected to the Multimedia System Control Module - J650- .
- Remove the glove compartment. Refer to ➔ Body Interior; Rep. Gr. 68 ; Storage Compartments/Covers; Overview - Glove Compartment .
- Release and disconnect the connector from the Multimedia System Control Module - J650- .
- Remove the screws -3- and remove the Multimedia System Control Module - J650- -1- with the bracket -2-.
- Remove the bracket -2- from the Multimedia System Control Module - J650- -1-.

## Installing

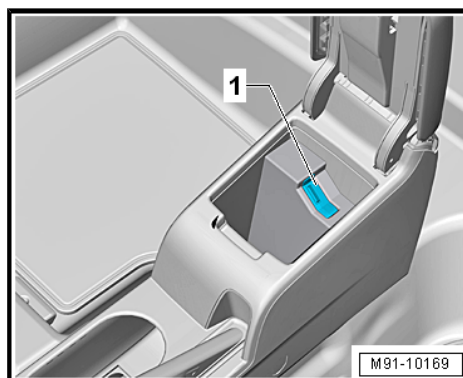
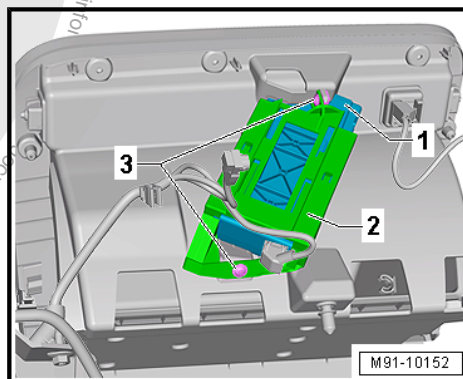
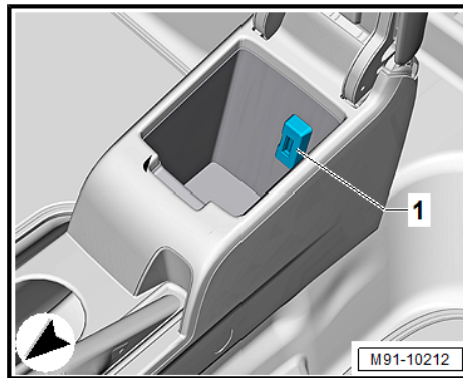
Install in reverse order of removal.

## Tightening Specifications

- ◆ Refer to ➔ ["10.2 Component Location Overview - Mobile Online Services", page 131](#)

## 9.3.6 Multimedia System Control Module - J650- , Removing and Installing, UMI Control Module in the Center Console

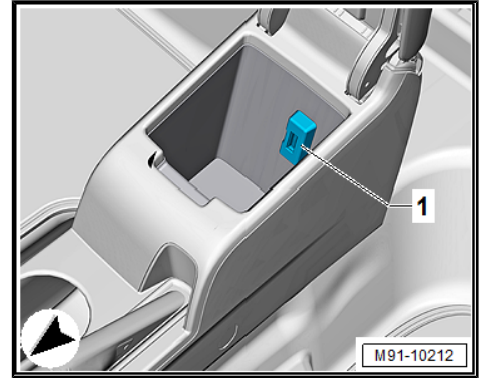
The Multimedia System Control Module - J650- -1- is installed in the center console.





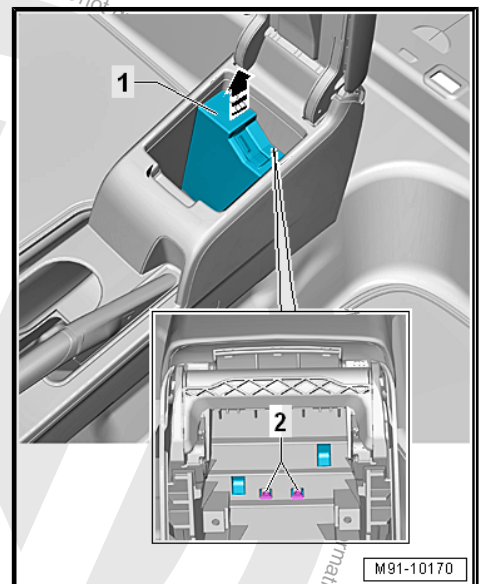
## Note

- ◆ On some vehicles, the Multimedia System Control Module - J650- is installed on the glove compartment, but the connection -1- for the device-specific adapter cable was routed in the storage compartment under the center armrest in the center console.
- ◆ Therefore a visual inspection of the connection -1- for the device-specific adapter cable must be performed in the storage compartment under the center armrest.
- ◆ If the connection -1- for the device-specific adapter cable corresponds to the image shown, then the Multimedia System Control Module - J650- is installed on the glove compartment. Refer to Multimedia System Control Module - J650- , Removing. Refer to ⇒ [page 126](#) .
- ◆ Connection -1- for Device-Specific Adapter Cable, Removing and Installing. Refer to ⇒ ["9.3.7 Connection for Device-Specific Adapter Cable, Removing and Installing", page 128](#)



## Removing

- Switch off the ignition and all electrical equipment and remove the ignition key.
- Remove any devices connected to the Multimedia System Control Module - J650- .
- Remove the rear center console trim. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Center Console; Rear Center Console Trim »Comfort and Highline«, Removing and Installing .
- Release the catches -2- on the bracket for the Multimedia System Control Module - J650- -1-.
- Pull the Multimedia System Control Module - J650- -1- with the bracket and trim upward from the center console -arrow-, until the connector is accessible.
- Release and disconnect the connector from the Multimedia System Control Module - J650- .





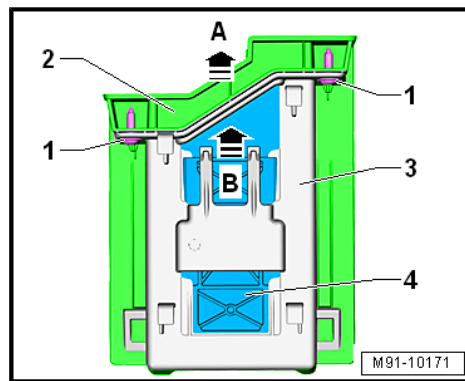
- Remove the screws -1-.
- Remove the trim -2- in the direction of -arrow A- from the bracket -3-.
- Remove the Multimedia System Control Module - J650- -4- in the direction of the -arrow B- from the bracket -3-.

#### Installing

Install in reverse order of removal.

#### Tightening Specifications

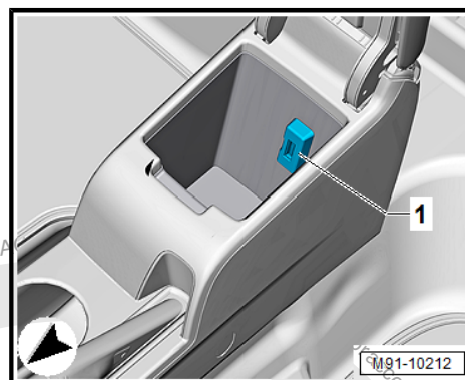
Component	Tightening Specification
Screw for trim to bracket	2 Nm



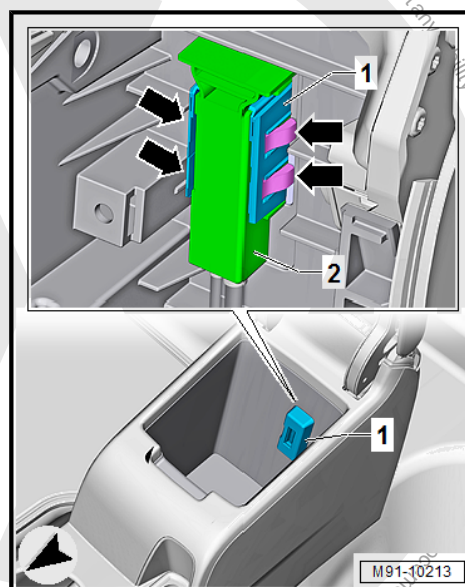
### 9.3.7 Connection for Device-Specific Adapter Cable, Removing and Installing

#### Removing

- Switch off the ignition and all electrical equipment and remove the ignition key.
- Remove the device-specific adapter cable plugged into the connection -1-.
- Remove the rear center console trim. Refer to ➤ Body Interior; Rep. Gr. 68 ; Center Console; Rear Center Console Trim »Comfort and Highline«, Removing and Installing .
- If equipped, remove the air duct in the rear center console. Refer to ➤ Heating, Ventilation and Air Conditioning; Rep. Gr. 87 .



- Release the retainers -arrows- on both sides of the trim -1-.
- At the same time, remove the trim -1- in the storage compartment under the center armrest from the connection -2-.

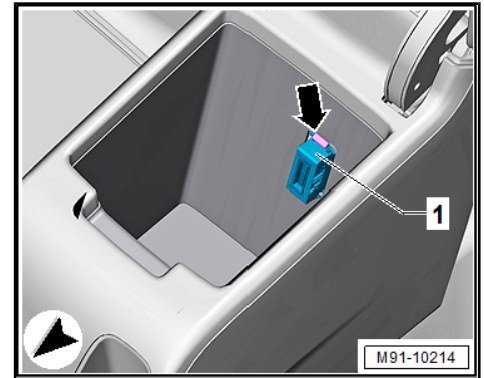




- Release the retainer -arrow- from the connection -1-.
- Push the connection -1- at the same time toward the rear out of the storage compartment under the center armrest.

### Installing

Install in reverse order of removal.





## 10 Mobile Online Services

⇒ “10.1 Overview - Mobile Online Services”, page 130

⇒ “10.2 Component Location Overview - Mobile Online Services”, page 131

⇒ “10.3 Control Module for Emergency Call Module and Communication Unit J949 Connectors”, page 132

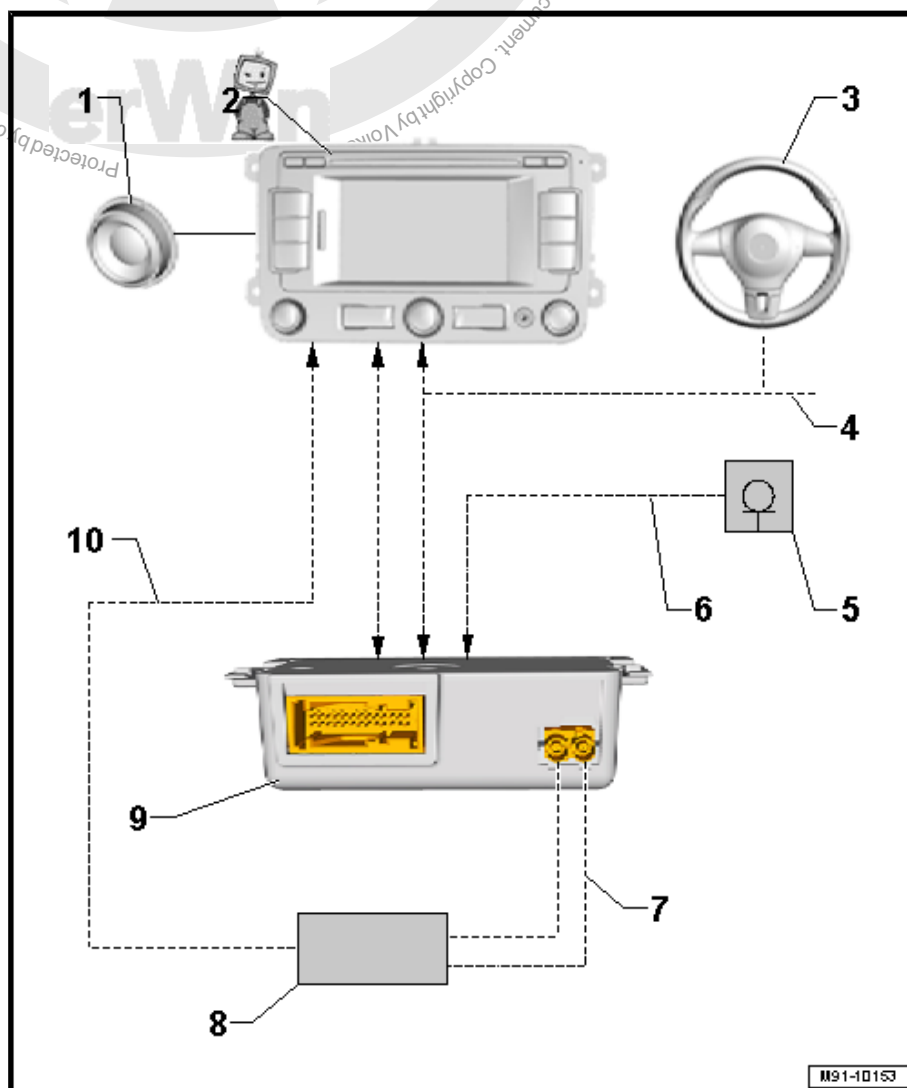
⇒ **“10.4 Control Module for Emergency Call Module and Communication Unit J949 , Removing and Installing”**, page 132

## 10.1 Overview - Mobile Online Services

The mobile online services are based on the OCU, Online Connectivity Unit, and the Control Module for Emergency Call Module and Communication Unit - J949- .

The Control Module for Emergency Call Module and Communication Unit - J949- is installed instead of the Telephone Transceiver - R36-. The component location is the same. In addition to the UHV, the Control Module for Emergency Call Module and Communication Unit - J949- also includes an emergency call module and a compass module. A separate SIM card is installed for the emergency call function and roadside assistance.

- 1 - Speaker System**
- 2 - Radio/RNS**
- 3 - Multifunction Steering Wheel**
- 4 - CAN Bus**
- 5 - Telephone Microphone - R38- / Cellular Telephone Preparation Control Head - E508-**
- 6 - Wire from Front Interior Lamp - W1-**
- 7 - GPS Antenna - R50- Wire**
  - ☐ Only with radio
- 8 - Roof Antenna - RX5-**
  - ☐ GSM/GPS
- 9 - Control Module for Emergency Call Module and Communication Unit - J949-**
- 10 - GPS Antenna - R50- Wire**
  - ☐ Only with RNS





## 10.2 Component Location Overview - Mobile Online Services

### 1 - Control Module for Emergency Call Module and Communication Unit - J949-

- ❑ Connector Assignment. Refer to ➔ ["10.3 Control Module for Emergency Call Module and Communication Unit J949 Connectors", page 132](#).
- ❑ Removing and Installing. Refer to ➔ ["10.4 Control Module for Emergency Call Module and Communication Unit J949, Removing and Installing", page 132](#).

### 2 - Foam Insert

### 3 - Telephone Microphone - R38-

- ❑ In the Front Interior Lamp - W1-
- ❑ Removing and Installing. Refer to ➔ ["5.3 Telephone Microphone R38, Removing and Installing", page 74](#).

### 4 - Cellular Telephone Preparation Control Head - E508-

- ❑ In the Front Interior Lamp - W1-
- ❑ Removing and Installing. Refer to ➔ ["5.7 Cellular Telephone Preparation Control Head, Removing and Installing", page 79](#).

### 5 - Radio/RNS

- ❑ Radio. Refer to ➔ ["4 Radio", page 24](#)
- ❑ RNS. Refer to ➔ ["6 Navigation System", page 85](#).

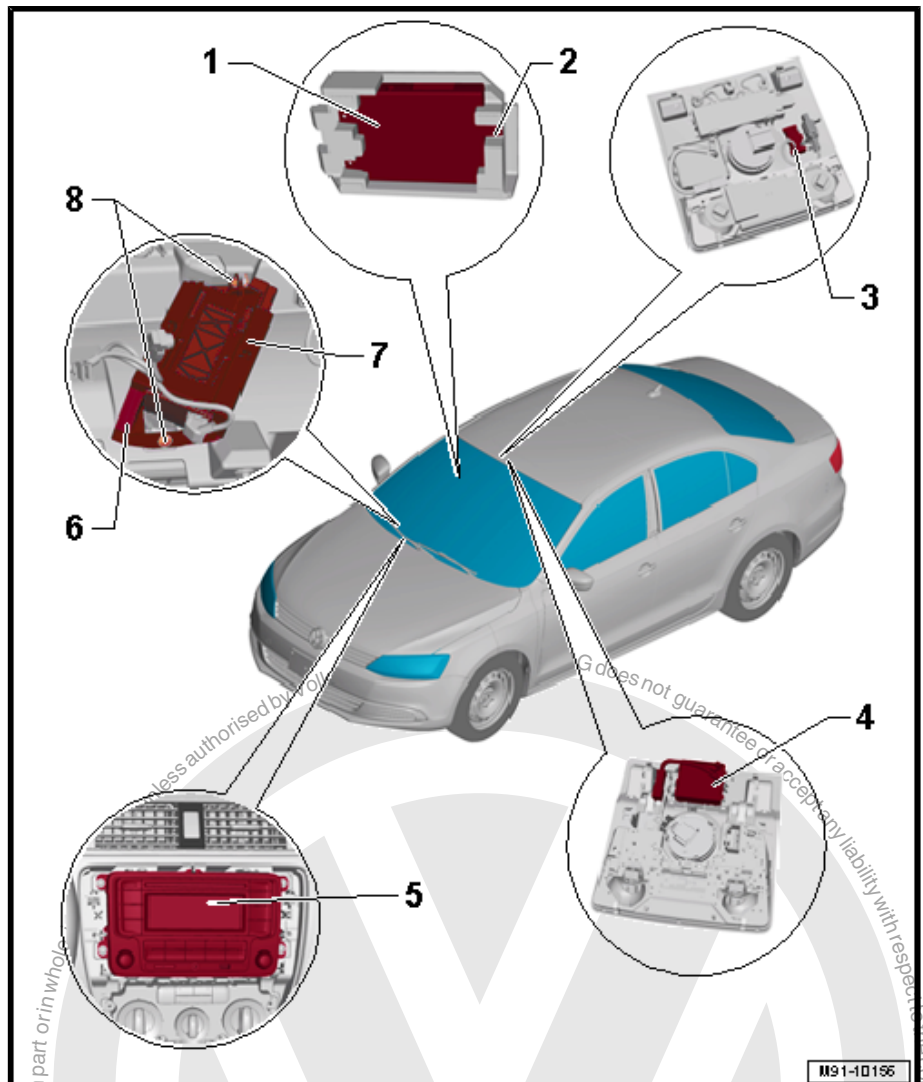
### 6 - Bracket

### 7 - Multimedia System Control Module - J650- , UMI

- ❑ Refer to ➔ ["9 Connection for External Multimedia Devices", page 111](#).

### 8 - Bolt

- ❑ 1.5 Nm
- ❑ Quantity: 2



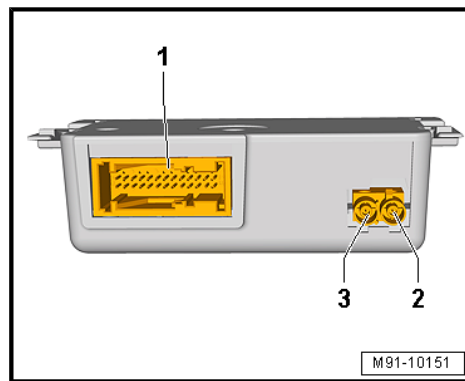
M91-ID156



## 10.3 Control Module for Emergency Call Module and Communication Unit - J949- Connectors

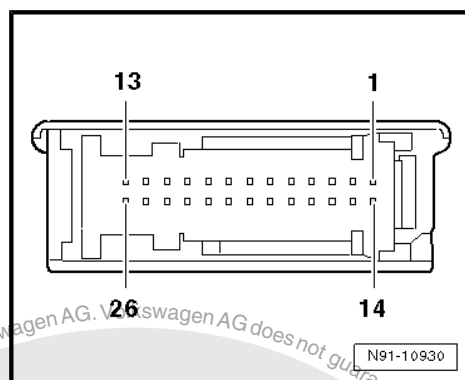
### Control Module for Emergency Call Module and Communication Unit - J949-

- 1 - 26-Pin Multi-Pin Connector
- 2 - GPS connection, GPS Antenna - R50- , with radio/Not Assigned with RNS
- 3 - GSM connection, from Telephone Antenna - R65- , roof antenna



### 1 - 26-Pin Multi-Pin Connector

- 1 - Terminal 30
- 2 - CAN Bus Low
- 3 - Not Assigned
- 4 - Telephone Microphone - R38- (+)
- 5 - Telephone Microphone - R38- to RNS/UMI
- 6 - Cellular Telephone Preparation Control Head - E508-
- 7 - Cellular Telephone Preparation Control Head - E508-
- 8 - Not Assigned
- 9 - Not Assigned
- 10 - Tel-LF (+) to Radio/RNS
- 11 - Tel-LF (-) to Radio/RNS
- 12 - Not Assigned
- 13 - Not Assigned
- 14 - CAN Bus High
- 15 - Not Assigned
- 16 - Not Assigned
- 17 - Telephone Microphone - R38- (-)
- 18 - Telephone Microphone - R38- to RNS/UMI
- 19 - Cellular Telephone Preparation Control Head - E508-
- 20 - Cellular Telephone Preparation Control Head - E508-
- 21 through 25 - Not Assigned
- 26 - Terminal 31



## 10.4 Control Module for Emergency Call Module and Communication Unit - J949- , Removing and Installing

The Control Module for Emergency Call Module and Communication Unit - J949- is installed under the right front seat.

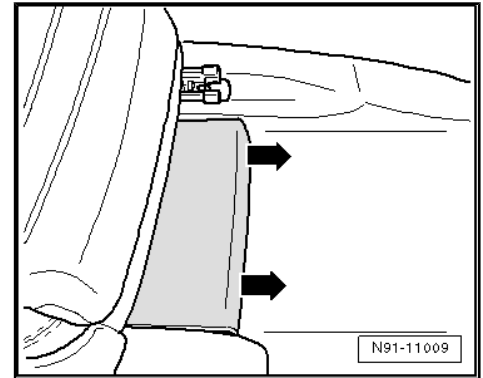
### Removing

- Turn off the ignition and all electrical equipment and remove the ignition key.
- Move the right front seat into its highest position and the move it all the back.





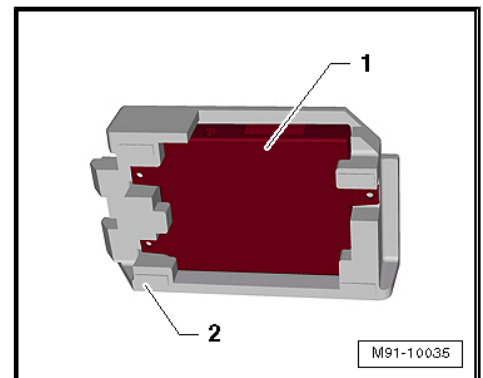
- Remove the cover under the seat in the direction of the -arrow-.
- Release and disconnect the connectors from the Control Module for Emergency Call Module and Communication Unit - J949- .



- Remove the Control Module for Emergency Call Module and Communication Unit - J949- -1- from the foam insert -2-.

### Installing

Install in reverse order of removal.

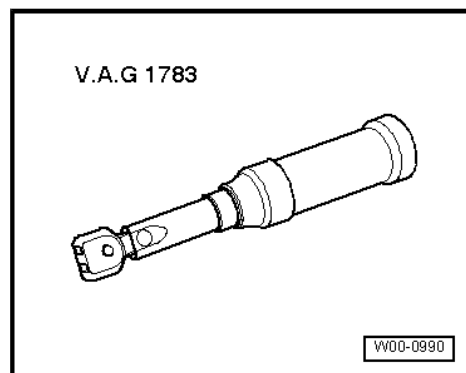




## 11 Special Tools

### Special tools and workshop equipment required

- ◆ Torque Wrench 1783 - 2-10Nm - VAG1783-



- ◆ Trim Removal Wedge - 3409-





## 12 Revision History

DRUCK NUMBER: K0059072321

Factory Edition	Edit Edition	Job Type	Feedback	Notes	Quality Checked By
12.2 015	01/12/2016	Factory Update			Joe Y.
08.2 014	10/28/2015	Local Factory Feedback	1128437	J412 updates added ahead of factory update. New chapter 9.3.6 added.	Tom Perry
08.2 014	06/16/2015	Reformat		Changed to new system-based format	Tom Perry
08.2 014	01/23/2015	Local Feedback	1075112	16 metadata removed	Tom Perry
08.2 014	08/19/2014	Factory Update	1031097		Tom Perry
	6/12/2014	Feedback	1017768, 1017288, 1017286	UMI location clarification	Jim H.

# Cautions & Warnings

**Please read these WARNINGS and CAUTIONS before proceeding with maintenance and repair work. You must answer that you have read and you understand these WARNINGS and CAUTIONS before you will be allowed to view this information.**

- If you lack the skills, tools and equipment, or a suitable workshop for any procedure described in this manual, we suggest you leave such repairs to an authorized Volkswagen retailer or other qualified shop. We especially urge you to consult an authorized Volkswagen retailer before beginning repairs on any vehicle that may still be covered wholly or in part by any of the extensive warranties issued by Volkswagen.
- Disconnect the battery negative terminal (ground strap) whenever you work on the fuel system or the electrical system. Do not smoke or work near heaters or other fire hazards. Keep an approved fire extinguisher handy.
- Volkswagen is constantly improving its vehicles and sometimes these changes, both in parts and specifications, are made applicable to earlier models. Therefore, part numbers listed in this manual are for reference only. Always check with your authorized Volkswagen retailer parts department for the latest information.
- Any time the battery has been disconnected on an automatic transmission vehicle, it will be necessary to reestablish Transmission Control Module (TCM) basic settings using the VAG 1551 Scan Tool (ST).
- Never work under a lifted vehicle unless it is solidly supported on stands designed for the purpose. Do not support a vehicle on cinder blocks, hollow tiles or other props that may crumble under continuous load. Never work under a vehicle that is supported solely by a jack. Never work under the vehicle while the engine is running.
- For vehicles equipped with an anti-theft radio, be sure of the correct radio activation code before disconnecting the battery or removing the radio. If the wrong code is entered when the power is restored, the radio may lock up and become inoperable, even if the correct code is used in a later attempt.
- If you are going to work under a vehicle on the ground, make sure that the ground is level. Block the wheels to keep the vehicle from rolling. Disconnect the battery negative terminal (ground strap) to prevent others from starting the vehicle while you are under it.
- Do not attempt to work on your vehicle if you do not feel well. You increase the danger of injury to yourself and others if you are tired, upset or have taken medicine or any other substances that may impair you or keep you from being fully alert.
- Never run the engine unless the work area is well ventilated. Carbon monoxide (CO) kills.
- Always observe good workshop practices. Wear goggles when you operate machine tools or work with acid. Wear goggles, gloves and other protective clothing whenever the job requires working with harmful substances.
- Tie long hair behind your head. Do not wear a necktie, a scarf, loose clothing, or a necklace when you work near machine tools or running engines. If your hair, clothing, or jewelry were to get caught in the machinery, severe injury could result.
- Do not re-use any fasteners that are worn or deformed in normal use. Some fasteners are designed to be used only once and are unreliable and may fail if used a second time. This includes, but is not limited to, nuts, bolts, washers, circlips and cotter pins. Always follow the recommendations in this manual - replace these fasteners with new parts where indicated, and any other time it is deemed necessary by inspection.



# Cautions & Warnings

- Illuminate the work area adequately but safely. Use a portable safety light for working inside or under the vehicle. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.
- Friction materials such as brake pads and clutch discs may contain asbestos fibers. Do not create dust by grinding, sanding, or by cleaning with compressed air. Avoid breathing asbestos fibers and asbestos dust. Breathing asbestos can cause serious diseases such as asbestosis or cancer, and may result in death.
- Finger rings should be removed so that they cannot cause electrical shorts, get caught in running machinery, or be crushed by heavy parts.
- Before starting a job, make certain that you have all the necessary tools and parts on hand. Read all the instructions thoroughly; do not attempt shortcuts. Use tools that are appropriate to the work and use only replacement parts meeting Volkswagen specifications. Makeshift tools, parts and procedures will not make good repairs.
- Catch draining fuel, oil or brake fluid in suitable containers. Do not use empty food or beverage containers that might mislead someone into drinking from them. Store flammable fluids away from fire hazards. Wipe up spills at once, but do not store the oily rags, which can ignite and burn spontaneously.
- Use pneumatic and electric tools only to loosen threaded parts and fasteners. Never use these tools to tighten fasteners, especially on light alloy parts. Always use a torque wrench to tighten fasteners to the tightening torque listed.
- Keep sparks, lighted matches, and open flame away from the top of the battery. If escaping hydrogen gas is ignited, it will ignite gas trapped in the cells and cause the battery to explode.
- Be mindful of the environment and ecology. Before you drain the crankcase, find out the proper way to dispose of the oil. Do not pour oil onto the ground, down a drain, or into a stream, pond, or lake. Consult local ordinances that govern the disposal of wastes.
- The air-conditioning (A/C) system is filled with a chemical refrigerant that is hazardous. The A/C system should be serviced only by trained automotive service technicians using approved refrigerant recovery/recycling equipment, trained in related safety precautions, and familiar with regulations governing the discharging and disposal of automotive chemical refrigerants.
- Before doing any electrical welding on vehicles equipped with anti-lock brakes (ABS), disconnect the battery negative terminal (ground strap) and the ABS control module connector.
- Do not expose any part of the A/C system to high temperatures such as open flame. Excessive heat will increase system pressure and may cause the system to burst.
- When boost-charging the battery, first remove the fuses for the Engine Control Module (ECM), the Transmission Control Module (TCM), the ABS control module, and the trip computer. In cases where one or more of these components is not separately fused, disconnect the control module connector(s).
- Some of the vehicles covered by this manual are equipped with a supplemental restraint system (SRS), that automatically deploys an airbag in the event of a frontal impact. The airbag is operated by an explosive device. Handled improperly or without adequate safeguards, it can be accidentally activated and cause serious personal injury. To guard against personal injury or airbag system failure, only trained Volkswagen Service technicians should test, disassemble or service the airbag system.

## Cautions & Warnings

- Do not quick-charge the battery (for boost starting) for longer than one minute, and do not exceed 16.5 volts at the battery with the boosting cables attached. Wait at least one minute before boosting the battery a second time.
- Never use a test light to conduct electrical tests of the airbag system. The system must only be tested by trained Volkswagen Service technicians using the VAG 1551 Scan Tool (ST) or an approved equivalent. The airbag unit must never be electrically tested while it is not installed in the vehicle.
- Some aerosol tire inflators are highly flammable. Be extremely cautious when repairing a tire that may have been inflated using an aerosol tire inflator. Keep sparks, open flame or other sources of ignition away from the tire repair area. Inflate and deflate the tire at least four times before breaking the bead from the rim. Completely remove the tire from the rim before attempting any repair.
- When driving or riding in an airbag-equipped vehicle, never hold test equipment in your hands or lap while the vehicle is in motion. Objects between you and the airbag can increase the risk of injury in an accident.

**I have read and I understand these Cautions and Warnings.**

